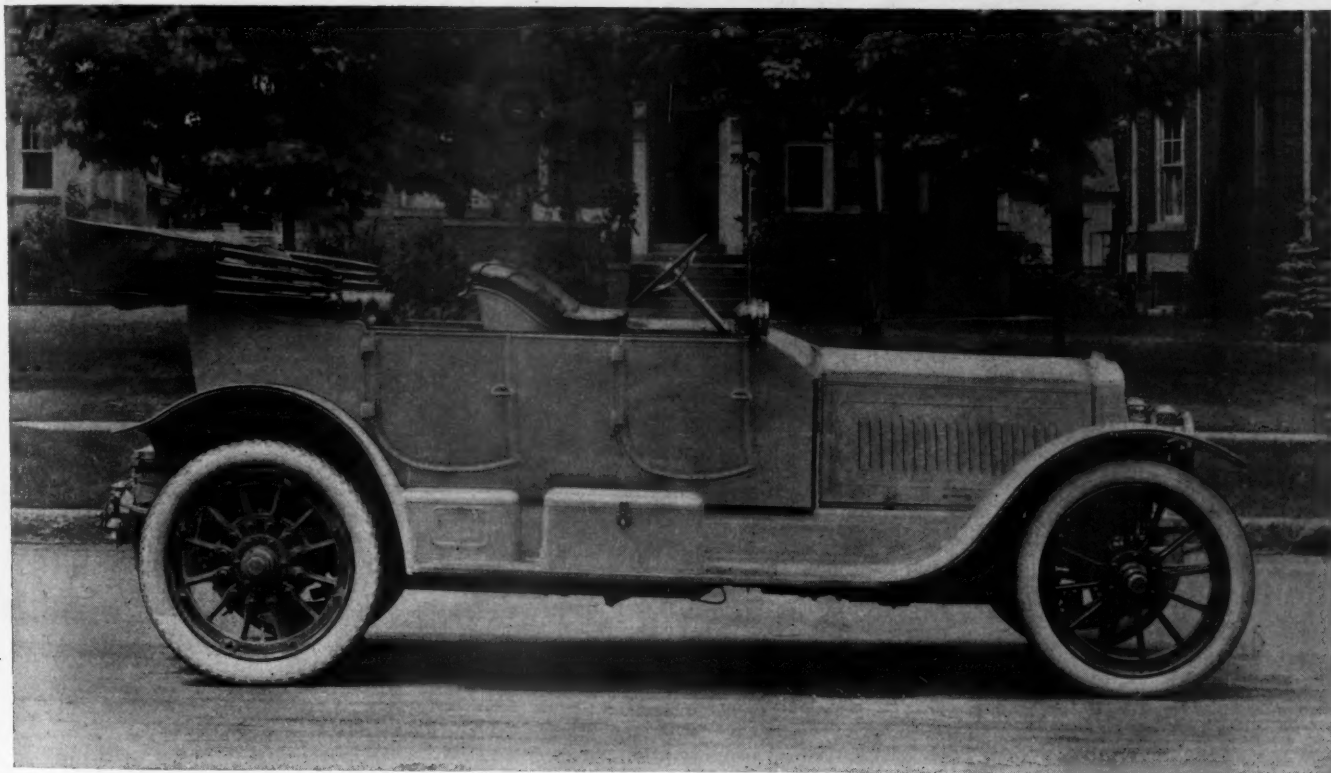


MOTOR AGE

VOLUME XXI

CHICAGO, JUNE 13, 1912

NUMBER 24



Larchmont—A New Lozier Model

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JUNE 13, 1912

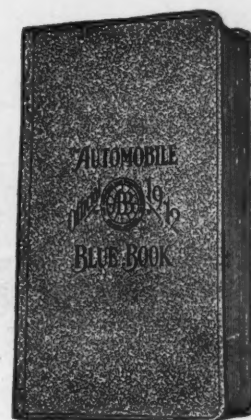
No. 24

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MOTOR AGE

Touring West Through Utah and Nevada

Three Transcontinental Routes Run Out of Salt Lake City—Former Mayor W. M. Bransford Describes 6-Day Motor Tour

Summary of the Trip Taken by W. M. Bransford

First day	Salt Lake to Brigham City..	60.1	3	hours
Second day	Brigham City to Kelton...	69.3	5	hours
	Kelton to Lucin.....	53.8	5	hours
	Lucin to Montella.....	19.2	1½	hours
Third day	Montella to Wells.....	55.2	4	hours
	Wells to Elko.....	62.2	3½	hours
Fourth day	Elko to Eureka.....	103.8	5	hours
Fifth day	Eureka to Austin.....	68.5	5	hours
	Austin to Fallon.....	115.0	8	hours
Sixth day	Fallon to Reno.....	68.9	3¾	hours
		676.0	43¾	hours

By W. M. Bransford

TRANSCONTINENTAL touring is gaining so much favor that it seems apropos to give the uninitiated some idea of what is really encountered in the way of roads, supplies and accommodations for the motorists in the west and especially in Utah and Nevada.

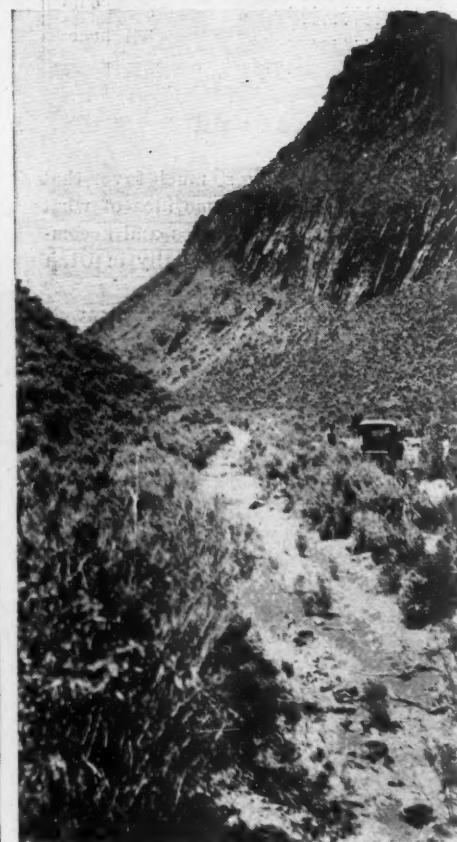
The central route from Cheyenne west seems pretty well decided across Wyoming. It practically follows the line of the Union Pacific railroad up to Salt Lake City. No one seems to encounter anything especially rough or unsurmountable, accommodations and gasoline can be had at the various towns along the railroad and the road is passable even when reasonably wet.

It is not until Salt Lake City is reached that much question arises as to the most feasible route. From that city west there are three routes, all of which are now mapped and logged and all of which converge at Eureka, Nev., when San Francisco is the destination and Ely, Nev., when Los Angeles is the objective point. The latter route, however, adds some 400 miles of desert driving so that most motorists prefer to go direct to San Francisco and thence south over the improved California roads.

There are three routes from Salt Lake west. The northern skirts the Great Salt lake on the north to Elko, Nev., and thence to Eureka; the southern, or Fish Springs route, leads around the south end of the Great Salt lake to Ely, Nev., and thence to Eureka; and the Milford route goes still farther south and finally reaches Ely.

Several things must be taken into consideration in choosing a route. For instance, supplies for the car, accommo-

This is one of the scenes which greet motorists traveling in Nevada. The illustration shows the Truckee river near Reno and also gives an idea of the kind of roads found in that section of the far West



The upper illustration shows Mr. Bransford coming down Freezeout hill, which is located between Cobre and Wells, Nevada. The lower illustration shows a pass in which the road was completely gone but which failed to stop the hardy motorists, who rather enjoyed the roughing it experience they gained on this part of their journey through Utah and Nevada to their destination.



"The road to Ogden, 37 miles, leads along a bench of the Wasatch mountains, which gradually slope down to the shore of the Great Salt lake. The country is thickly settled by farms and country homes"

dations for the passengers, conditions of the roads, assistance in case of breakdowns or boggy roads.

Crossing the desert as most people had it pictured 2 years ago was more of a feat than a pleasure and it was with some reluctance that my father consented to take his new car off the beaten path. When it was decided that we should go we made up our party of seven with two cars. At this time but few had made the trip over any of the routes and in only one or two cases had there been any women along so it was necessary for us to decide upon a route that would add to the comfort of the latter. Two of us had been over sections of all of the routes and we finally decided, in view of the accommodations and supplies, to take the northern route and follow the old line of the Southern Pacific railroad via Kelton and Terrace, Utah.

One car was a six-36 Pierce touring car and I used a six-48 Pierce with four-passenger body. We outfitted with pick, axe, shovel and some rope, and each car carried a 5-gallon can of extra gasoline and a 2-gallon desert water bag, while I carried a 5-gallon can of extra lubricating oil. These were our only extras except cameras, vacuum bottles, some fishing tackle, a rifle and a suit case for each passenger.

Start from Salt Lake

We left Salt Lake City June 2 about 3 p. m. The road to Ogden, 37 miles, leads along a bench of the Wasatch mountains, which gradually slope down to the shore of the Great Salt lake. The country is thickly settled by farms and country homes with orchards and gardens of 10 to 20 acres each and at this season everything was beautiful.

The road itself is only passable and a disappointment to everyone who goes over it. We drove into Ogden at 5 p. m. and from there to Brigham City, 23 miles, where we stayed for the night, we found practically the same character of country but a much better road. Bright and early

the next morning we were off. The air was crisp but not cold and before sunrise we found ourselves in Corrine, a small town 6 miles from Brigham City. It was from this town, which is on the old line of the Southern Pacific, that all of the freight and mail of Montana and Idaho was hauled by mules and oxen during the 70's and 80's. It was the railroad point of the northern intermountain country. Some of the old stores still stand but the town is almost deserted.

Climbing Promontory Range

We did not stop. The road was good and by sun-up we were across the valley and climbing the Promontory range of mountains. This is the edge of the desert. The first climb is the longest and steepest. The range is not high and after several miles through the mountains we came on top of a hill overlooking Salt Wells flat.

This is an arm of the Great Salt lake, but the old railroad grade has shut out the salt water and it is now an alkali flat, one of those white, absolutely barren tracts of land, 15 miles long by 5 miles wide, perfectly smooth, but impassable because of the water being so close to the surface that a machine is liable to break through the crust at any time. Throughout the whole country adjacent to the Great Salt lake one is constantly encountering alkali flats, some large and some small. The general opinion among motorists seems to be, an alkali flat, a chance to speed. This is true if the flat is dry, but the point is to know when it is dry. The slightest rain and it is wet and my experience has been that here is always the chance of some spot never drying out. Herein lies the danger.

Take for instance the Salt Wells flat. Suppose you do get across, then everything is fine, but if you happen to strike a wet spot—and it has been done many times on this particular flat—what is the result? You are 20 miles at least from sage brush, which is your only salvation, civilization or help of any kind and the



"Up and down the hills we rolled. The road was improved to some extent and the washes bridged and by 12:30 we were at Sadler's ranch, where we had lunch on the porch of the ranch house"

is on the edge from 1 to 3 miles away. There are three things which you can do—back trail until you come upon a team able to pull you out; cut and carry sage to corduroy the trail, using your foot boards to jack from or sit still and wait for something to turn up.

Avoid Alkali Flats

After several years' experience with motor cars on desert work, I find that you can drive a good many miles and save a lot of energy during the time you are doing any of the above things and I always advise avoiding, if possible, alkali flats.

We adopted this latter plan and drove around the north end and down the west side of the railroad again at Monument Point. The distance is 10 miles greater, but outside of one short stretch, the road is fair and passable even if wet. Here you get your first close and only good view of the Great Salt lake. The place derives its name from a large cliff or monument of rock which stands alone in the water some 500 yards from the shore. Here we also passed some ruins of an old salt refinery.

The road into Kelton, 15 miles, passes through a flat country, but of slightly higher ground and when dry is fine. We arrived at the latter place, which is on the extreme north end of the lake, but 4 or 5 miles from the shore, about 10:30 in the forenoon. The town consisted of a store with gasoline, a hotel, which is fair, and several small shacks, probably twenty-five souls would cover the population. However, one can spend the night there if necessary. Both the road and the railroad bear southwest in leaving. The road is described here in the west as washed, which means cut by rains and melting snows and is unimproved in every sense of the word. None of the washes is bridged and their banks generally are straight down and then up after each storm. However, we were able to reach Dove creek, 15 miles, before it was necessary for us to use our pick and shovel.

The road at this time looked as if it had not been traveled that year and we found many others along here which needed pruning before we were able to get over.

The country is comparatively high ground and slightly rocky so that we finally reached Terrace, 30 miles from Kelton, a deserted freight division of the old Southern Pacific and the first water since leaving the latter place for lunch. This, I think, is the longest dry stretch of the entire route. Between here and Lucin, 22 miles, is one wash after another, the largest being Grouse creek, but all were dry. It does not necessarily follow in this country that a creek should have water in it at all seasons, even if it is named. Most of them have dried up by the first of June, which in the absence of bridges, is a fortunate thing, as I think they could not be crossed if wet. It is these washes between Kelton and Lucin that cause many to try the southern or Milford routes. However, as these conditions, coupled with quite a little sand, exist to practically the same extent in both the latter sections, I still contend that this is the most feasible route.

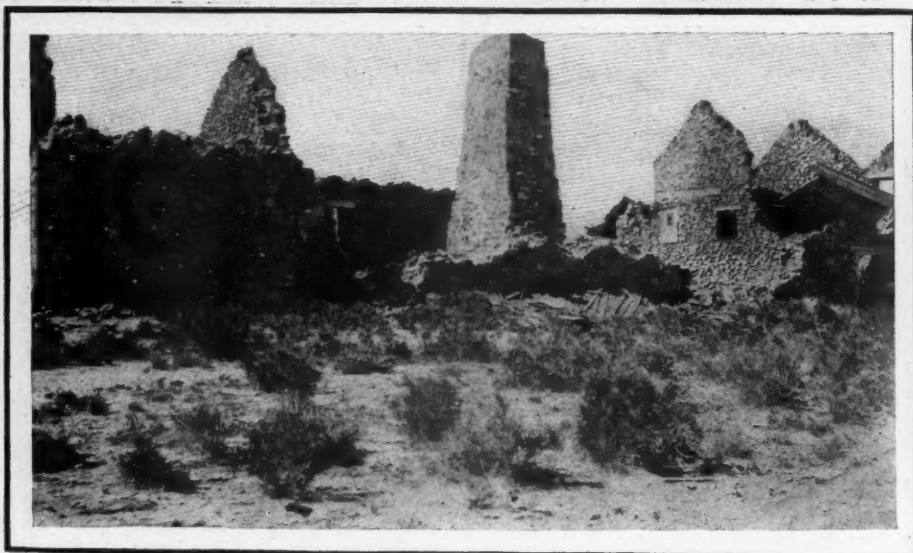
Good Test of a Car

We finally reached Lucin, the junction of the old line and the Great Salt lake cutoff of the Southern Pacific at 5:30 p. m.—52 miles in 7 hours, and no time were we stuck or hung up by mud or anything else except dry washes. In passing, I wish to say that if a car will stand the warping and twisting of these 52 miles you need have no fear of the rest of the trans-continental route.

Leaving Lucin, we found a good but unreasonable route to Montella, 19 miles; unreasonable, because you make a big circuit over a mountain while the railroad goes direct through a big flat, but there is no choice. I spent 3 hours upon one occasion trying to find a road which paralleled the railroad across this flat. There isn't any, so you do the unreasonable thing and go over the mountain.



The three illustrations show roads in Nevada where the going is particularly hard. In some places it is necessary to remove stones from the road but notwithstanding this motorists have little or no trouble in following the trail. The scenery through this section of the far west is particularly wild and rugged and appeals to the transcontinental motorists who enjoy communing with nature



"Here you get your first close and only good view of the Great Salt lake. The place derives its name from a large cliff which stands alone in the water. Here we also passed some ruins of an old salt refinery"

Montella is a freight division on the main line of the Southern Pacific, has a first class railroad hotel and gasoline. We arrived there at 7 p. m. A little later a doctor from Los Angeles drove up from the west. He had been 3 weeks on the road and his car was in bad shape. In comparing our experiences, he said, "If you folks are looking for pleasure, turn back." We said, "We were going on." "Well, if you are looking for experience, you will get it," replied the doctor. Later we thought many times of him. He surely got his experience between Lucin and Kelton.

Next morning we started late. The character of the country changed. We seemed to be off the drainage of the Great Salt lake and the road lead through low rolling hills and was good, and after our experience of the afternoon of the day before it seemed as if the car flew.

Crossing Railroad Tracks

We had some little difficulty in crossing the railroad tracks below there, but once over the road, which went through low, rolling hills with a gradual ascent, improved with each mile. We found a few high centers where we had to take to the sage and one or two more high railroad crossings. As we kept getting higher and higher the view was grand. Grass grew abundantly amongst the sage and cattle roamed everywhere. Finally, coming out on top of a hill the road seemed to drop straight off down a bank. We stopped and descended one at a time, our wheels slid with the brakes set to the limit, but still the car did not stop. Considerable discussion arose as to whether a car could climb it. At the time I thought not even if one were able to feed gasoline to the carbureter. Although I have been over the road several times, it was not until 1911 that I was forced to try.

I climbed it the first attempt, but I know from my experience that nothing

but a high-powered car has a chance. It has been named Freezeout hill by the natives of that section and fortunately can be avoided if necessary.

Ascending gradually and the road improving, we reached Cedar Pass, the highest point between Salt Lake City and Reno, Nev., where we stopped a few minutes for the view. From here into Wells the country was similar to that just traversed. The road was excellent, in one case it was on an old railroad grade without a single bump or wash for 7 miles and we drove into Wells, 53 miles, in 4 hours, which includes all stops. This town had 2,000 population and accommodations and supplies of all kinds. It lies in the center of a large farming and stock raising country.

While taking on gasoline, the women of the party interested themselves in an old ox bow in front of the store. The inscription on it read that it was left near there by a party of forty-niners

and its weather beaten and worn appearance certainly confirmed this. We also purchased a typical western lunch of cheese, crackers, sardines and oysters and drove 8 miles out into a valley to a beautiful little stream called Trout creek at the base of the Ruby mountains, where we stopped for lunch. I don't know why these mountains should be so called unless it is because of their height and beauty. The tops are covered with perpetual snow and the countless streams of clear cold water which flow down their sides, caused us some inconvenience during the afternoon, as we drove along the north slope. I cannot understand why a settled community in this day and age should have so few bridges.

Through Dreary Territory

Approaching Deeth, a town of 1,000, the road was dusty. Here we crossed the Humboldt river to the north side and went through a large unimproved sage flat to Halleck, which is simply a section house and siding, then out over some rolling hills and crossed the north fork of the Humboldt, again over rolling hills and the last 10 miles into Elko was down a valley. The road was good all day, the ride a pleasure in every sense and the women of the party said they would like to go over it again. We arrived in Elko, a town of 5,000, the metropolis of north-eastern Nevada, spent a little time in oiling the cars, changed our clothing and then ate a fine dinner.

The doctor was wrong. We were out for pleasure and were getting it.

The next day we started late, about 10 o'clock. Our course lay about due south and our destination, Eureka. During floods of the spring the railroad running into Eureka had washed out and we were informed that we would be unable to get gasoline there. Austin, the first place where gasoline could be had, was said to be 200 miles, but the information was not definite, so we prepared for any emergency by taking full tanks and three extra cases



"We were able to reach Dove creek, 15 miles, before it was necessary to use our pick and shovel. The road at this time looked as if it had not been traveled that year and we found many others along here which needed repair before we were able to get over

besides the cans we had brought from Salt Lake and which up to this time were untouched. A case of gasoline or kerosene is two 5-gallon cans in a wooden box. This is the usual method in the west, except in the cities, of handling it. So that tanks and all we had 80 gallons of gasoline.

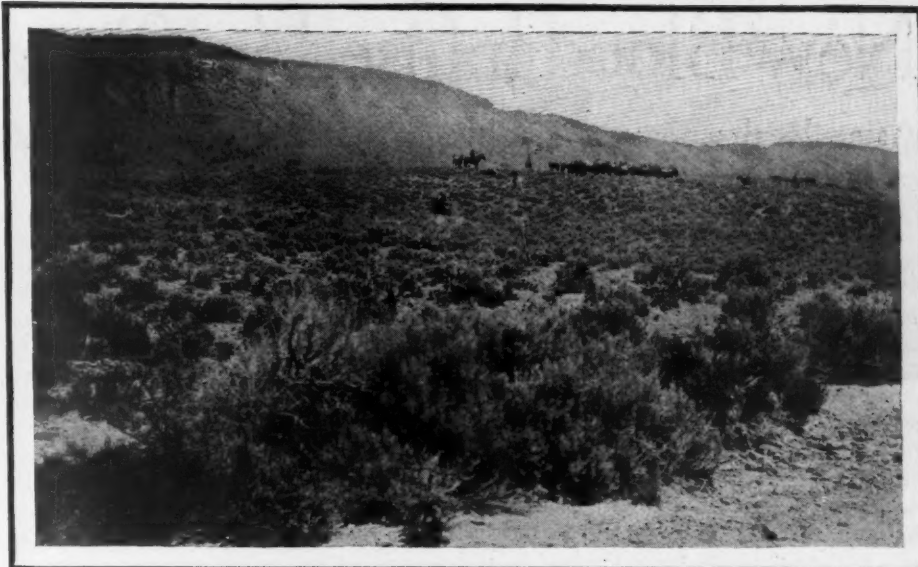
Through Rolling Country

The country south from Elko is similar to that above Wells, but more thickly settled. Up and down the hills we rolled. The road was improved to some extent and the washes bridged and by 12:30 we were at Sadler's ranch where we had lunch on the porch of the ranch house.

Below here is quite an important fork in the road. The right-hand road eventually leads you to Ely, whereas the left-hand one passes through a range of mountains. The pass is called railroad pass.

Emerging into Diamond valley as we came out of the mountains, the road was again good and from here into Eureka, with the exception of the last 3 miles, is through comparatively level country. Approaching Eureka, however, you ascend a canyon and find the town hidden away in the hills. Our information concerning the gasoline was correct, but our landlord proved the most accommodating of our entire trip. He insisted upon riding out 3 miles to the top of a hill to show us the road and he pointed out the pass in a distant range through which we were to go. The road generally was good, but not up to the standard of the 2 previous day. The old overland trail runs from 5 to 20 miles north of Eureka. In the days of the 49's there was no Eureka there. A few miles out we came into it and throughout the rest of the trip to Reno we were on this road most of the time. Quite a number of the rock ruins of the old stage stations and Indian forts still stand and mark the trail of the days of the pony express and overland mail.

We met one old prospector and stopped to pass the time of day. I said, "What



"By this time the road did not show much traffic and it was fortunate that we met a bunch of Indians, ten in all, driving some wild horses. They gave us our directions and we were soon in New Pass canyon"

are you doing out here?" "Looking for the yellow stuff," he replied. "Get his picture; get his picture," my wife said in a low but excited voice. I hesitated a moment and then said, "Got any objection to me taking a picture of your outfit?" He spied the water bag. "Trade you a picture for a drink of water." It was a bargain.

Approaching Austin there is a long hill, part of which is washed to high centers and in places quite steep. Again, we found the town in a canyon. We arrived there, 68 miles from Eureka, by 10:30 a. m. While replenishing the gasoline supply a rear tire blew out, the first trouble of the trip. Shortly after leaving Austin the road began to get washed, some of them quite deep and impassable. However, with a little scouting, we were able, although the banks were very steep and the footing soft, to cross them either above or below the road by rushing them

down and then up. By this time the road did not show much traffic and it was fortunate that we met a bunch of Indians, ten in all, driving some wild horses. They gave us our directions, which at this time was somewhat uncertain, and we were soon in New Pass canyon.

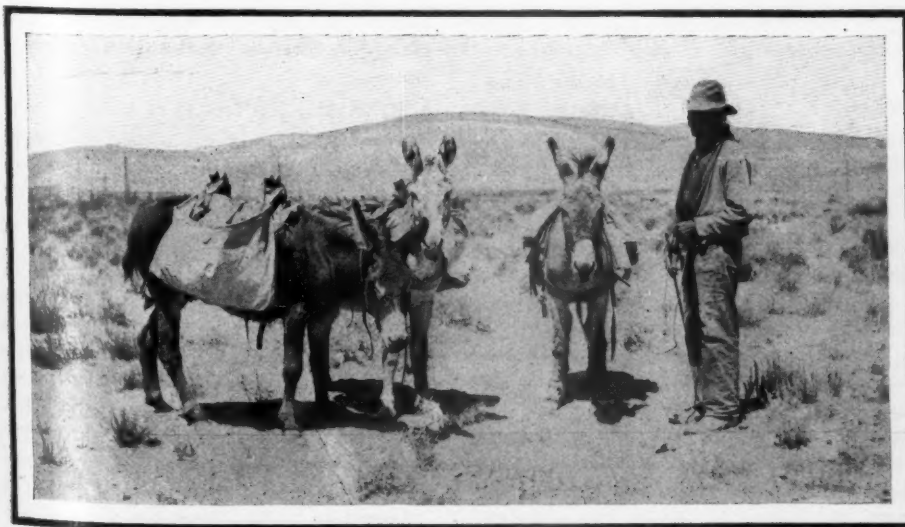
Alpine a Deserted Ranch

The road follows down this canyon for 11 miles. For the first 1½ mile the road was completely gone and it took quite a little skirmishing and rock-rolling for us to get through. After that the canyon opened out somewhat and the going was better, but it was mid-afternoon before we emerged into the Alpine valley.

Alpine, which is simply a deserted ranch, 47 miles from Austin, was reached about 3:15 p. m. and Eastgate, another ranch some 12 or 13 miles along, about 30 minutes later. Between here to Fallon, 45 miles, we passed near the mining towns of Fairview and Wonder, but did not enter them. Considerable freight and ore is hauled by mules and traction engines to the mines near here, so that the road is traveled and improved. On a flat near the former place we obtained the greatest speed, 55 miles per hour, of our entire trip and on another for 12 miles the speedometer rarely registered below 35 miles.

We arrived in Fallon, a town of 3,000 inhabitants, about dusk. This is, I should say, the western edge of the desert, for from here to Reno the country is pretty well settled, towns numerous and the roads show considerable traffic.

The trip to Tahoe and thence across the Sierra Nevadas to San Francisco was continued. Here we spent a week and then drove over the coast road to Los Angeles. The road and country have been too well described for me to attempt it. We arrived in the latter place July 17 after driving 2,700 miles and shipped home.



"We met an old prospector and stopped to pass the time of day. I said, 'What are you doing out here?' 'Looking for the yellow stuff,' he replied. 'Get his picture, get his picture,' my wife said"

New Blood Infused in Simms Magneto Co.

Assets Realization Co. of Chicago Secures Plant and Enters Into Working Agreement with C. G. Stoddard and H. J. Edwards, Who Will Continue the Business

NEW YORK, June 11—The \$1,000,000 plant of the Simms Magneto Co., Bloomfield, N. J., which was erected last fall but closed in November and since closed because of lack of capital, was last week secured by the Assets Realization Co., a Chicago concern, which makes a business of buying such plants. Scarcely had this concern acquired it than it entered into a working agreement with C. G. Stoddard and H. J. Edwards, of the Edwards Motor Car Co. of this city, to open the factory and start as soon as possible the manufacture of Simms magnetos in America.

The operating company, it is expected, will be known as the Simms Magneto Co., with C. G. Stoddard as president and H. J. Edwards as consulting engineer. While Stoddard and Edwards have taken the active control and direction of this plant, it will not in any wise effect the newly formed Edwards Motor Car Co., which is headed by them and which secured a license to build the Knight sleeve-valve motor for the Edwards car, which will shortly be announced. Both Mr. Stoddard and Mr. Edwards are pushing the car ahead at a rapid pace and an announcement of it will be made in a few weeks. Further progress with the car company has been made in that the company has decided to permanently locate in the east. It is the purpose to rent a factory for the 1913 output and then have their own factory ready for the following season.

In taking active control and management of the Simms Magneto Co., President Stoddard expects to soon get the factory up to capacity, which is 100,000 magnetos per year. There is stock on hand for 3,000 or 4,000 magnetos. With the purchase of the plant goes all the American patent rights for the manufacture of these magnetos, together with the rights of using all improvements and new patents that may be secured. The Simms plant is one of the most modern in the country. It is filled with all that is latest in the machinery line and has a complete set of jigs and fixtures for the manufacture of all magneto parts.

An informal meeting of the stockholders is to be held Thursday of this week for the purpose of considering carefully the affairs of the company's business, past and present, to decide whether the old company shall be liquidated and a new company organized and to determine upon a preferred stock issue for raising the necessary amount of cash as working capital.

Under the old regime the concern was capitalized for \$1,000,000, which was all common stock paid up. Of this amount \$750,000 went into plant and equipment and the

remaining \$250,000 was in payment for patent rights and other privileges. Under the new organization \$500,000 of preferred stock may be issued to provide ample operating capital. While Mr. Stoddard will be president the other members of the board and officers are not yet determined upon, but it is certain that the Assets Realization Co. will be represented on the board.

The working agreement in the Simms factory is but one of the activities of the Edwards Motor Car Co. and its moving spirits, Stoddard and Edwards. Three weeks ago this concern purchased the truck factory and patents of the Longest Brothers Co., Louisville, Ky., which for 3 years has been conducting experimental work on a gasoline motor truck. Three or four of these trucks have been in use for over a year and have given entire satisfaction. It is the purpose of the Edwards company to install its Knight type of sleeve-valve in this truck and market it for the 1913 trade. The Longest factory at Louisville is small, little more than an experimental shop, from which half a dozen trucks have been produced. Because of this the Longest truck will be produced in the same factory that the Edwards car will be built in.

SUIT AGAINST MILLER WITHDRAWN

New York, June 10—Suit entered recently on behalf of the Lovell-McConnell Mfg. Co. against Charles E. Miller, seeking an injunction to prevent the defendant from handling the Klaxon horn and the Newton horn at the same time by forbidding it to deal in one or the other and asking damages under a license granted to the defendant, has been withdrawn from the United States district court without prejudice.

Charles E. Miller was regularly licensed to sell Klaxons and Klaxonets by the complainant, the license containing the regular and usual clause acknowledging the validity of the patent rights in question. As the complainant is now prosecuting an action against the makers of the Newton horn, the question was raised as to the status of a licensed dealer who handled goods alleged to be infringements.

The defendant came into court last week before argument of the main case had been set down for hearing and presented affidavits to the effect that the company had abandoned all business in the Klaxon products. According to the statement of Charles E. Miller, the complainant offered to re-purchase all the unsold stock of the defendant and the settlement is reported to have been on a basis of

about \$2,000. As the object of the action was satisfied by this means, the suit was discontinued. The suit attracted considerable interest among the members of the motor industry as well as the patent bar on account of the fact that it was brought against a licensee by the licensing company because the licensee handled a line of goods in process of litigation as to its patent rights, the action with regard to which had been brought by the licensing company.

PERMANENT INJUNCTION ORDERED

New York, June 12—Special telegram—A mandate of the United States circuit court of appeals ordering a permanent injunction and providing for a final decree in the case of the Carlson Motor and Truck Co. against the Maxwell-Briscoe Motor Co. has been handed down to the United States district court. Last week a motion to modify the injunction was argued before Judge Hazel at Buffalo, but it was not entertained. The rendering of the mandate of the United States circuit court of appeals was delayed in order to allow the attorneys for the defense to present their arguments for modification of the court order.

MARKET FLUCTUATIONS

New York, June 12—The most notable occurrence in the motor car securities market during the week was the dip of United States Motor Co. common and preferred. At the beginning of the week common shares were quoted at 5 and were under considerable pressure. Then buying orders for a large block of this grade were spread around the market and the price steadily rose to 9½. The selling pressure became intense at less than level and the stock broke in big jumps until the shares stood at 1 bid for a short time on Monday. Since then there has been a gradual rise to 3½ with a steady undertone. The preferred also fluctuated widely in response to the dealings in the minor issue.

ADRIAN WOULD HOLD PLANT

Adrian, Mich., June 10—Adrian citizens will fight to the last ditch to hold the Lion Motor Car Co. whose local plant recently was destroyed by fire with a loss of approximately \$350,000. For the purpose of preventing the removal of the company to Detroit the citizens have offered to pledge \$100,000 or more in stock subscriptions providing the company will remain here. The board of commerce of Detroit also has been engaged in negotiations with the company for the removal to that city. The officers of the company have not decided upon their future plans as yet.

According to Vice-President Fred Postal of Detroit the company's net loss occasioned by the fire will approximate \$150,000. The company is capitalized at

Court Sustains Weed Against Atlas

\$360,000, of which about \$240,000 has been paid into the treasury in cash.

Word reaches here that Secretary F. H. Hysell of the Columbus Chamber of Commerce is on his way to Adrian in an effort to secure the location of the new Lion motor car plant in Columbus, Ohio. Since the plant was destroyed by fire the officers of the company have been looking around for another location. The Columbus Chamber of Commerce has been offering \$50,000 for the location of the plant in the Buckeye capital.

SCOTTISH ENGINEERS HERE

New York, June 11—Blackwood Murray, managing director of the Albion Motor Car Co., of Glasgow, Scotland, and a member of the council of the Institute of Automobile Engineers, accompanied by David Keachie, superintendent of the Albion company, is on a tour of inspection of the American truck plants. The Scottish engineers arrived Monday and after a courtesy call at the headquarters of the Society of Automobile Engineers left for Providence, R. I. From there they will travel to Detroit and then to Cleveland and Buffalo starting the homeward journey of July 6.

SPARK PLUGS IN COURT

New York, June 11—Spark plugs were discussed from various angles in the United States district court this week when the patent suit of A. R. Mosler & Co. against John Lurie, former president of the Auto Supply Co., as nominal defendant, was presented. The infringement of the Canfield patent, covering the type of construction in a spark plug which has an air chamber around the electrode. The opinion of the court is expected before the annual vacation period.

CONDITION OF RUBBER MARKET

New York, June 11—Crude rubber had a distinctly stronger tone in the world's markets this week as compared with last. The most tangible reason for the hardening of quotations was the gradually growing demand by consumers in London. Supplies were in about the usual volume and trade as a whole was quiet and steady. Both Para and plantations reflected the improved market conditions. The level for up-river was \$1.11½ a pound.

MAJOR FULLER RETIRING

Moline, Ill., June 10—Major L. M. Fuller, since the inception of the Velie Motor Co. its general manager and secretary, has resigned his position to take effect on September 1 next. He has accepted a position with the Bausch & Lomb Optical Co. of Rochester, N. Y., as the head of a new department just being established. Major Fuller still remains on the board of directors of the Velie Motor Vehicle Co., it is announced.

Decision Rendered in Suit Involving Parsons Non-Skid Patent —Order Entered for Final Decree in the Case of Republic Rubber Co. Against Morgan & Wright

NEW YORK, June 10—Fully sustaining the decree of the United States district court, which awarded an injunction, accounting and damage to the Weed Chain Tire Grip Co. against the Atlas Chain Co., the United States circuit court of appeals has rendered its opinion on Parsons non-skid patent, 723,299.

The contention of the Atlas company was that the Parsons patent applied only to tire chains that hung loosely upon the tire and that as the Atlas chains are fitted with tension springs and lever hooks for the purpose of fitting the Atlas grips snugly against the tire, the chains so provided do not come within the terms of the patent in suit.

The court held that such chains as that of the defendant company need not necessarily be used in accordance with the instruction book furnished with them and if not so used the chains would creep on the tire exactly as would the Weed chain. Judge Coxe covers this point by saying: "When the defendant sells a device, the natural, usual and preferential use of which constitutes an infringement, it is no answer to assert that it is possible, by limiting its efficiency, to use it innocently."

The opinion followed the substance of the decisions rendered in the Pitts, Pursell and Asch cases and to some extent the procedure in the western cases against Johnson and Channon, in all of which cases it was shown that the defendants advised purchasers to anchor their grips to prevent creeping. In each case it was shown that neglect to use the anchoring devices would allow the chains to creep and that the application of the anchoring device was not necessary in order to use the chain.

ANOTHER WEED SUIT

New York, June 11—Suit has just been entered in the United States district court by the Weed Chain Tire Grip Co. against Charles Weiland, a jobber in sundries, alleging infringement of the Parsons patent. Weiland was made defendant in a similar suit last month in which the adjuster patent was the subject matter. Judge Lacombe signed a temporary order restraining the defendant from violating the patent rights of the complainant pending the disposition of the action. The matter has been set down for hearing on Friday.

Final decree in the case of the Weed Chain Tire Grip Co. against the E. J. Willis Co., of Boston, has been entered in the United States district court, assessing the

damages to complainant at \$1,000. Appeal from this order is being prepared and the case is regarded as a test of the patents in suit in this section.

Willis is a large dealer in supplies and was sued by the Weed company for handling a chain which it is alleged was an infringement. On the original hearings in the district court Judge Lacombe ordered an interlocutory decree, from which an appeal was taken at once. This appeal has been withdrawn so that a final decree could be entered stipulating the amount of damages agreed upon by the litigants.

CARBURETER SUIT DISMISSED

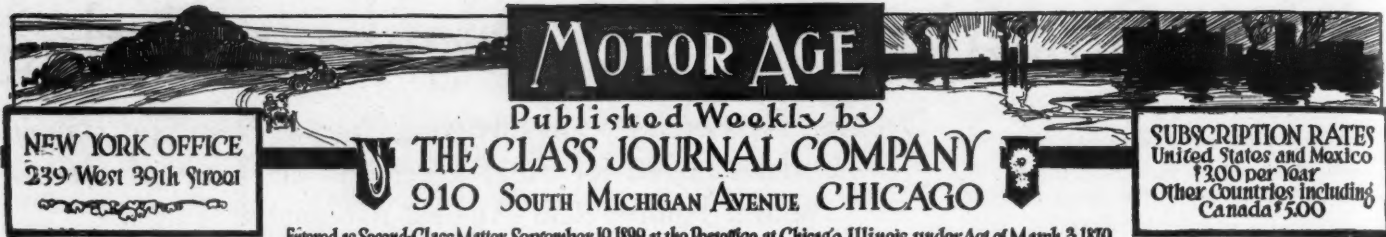
New York, June 12—Special telegram—Suit entered last winter on behalf of the Stromberg Motor Devices Co. against L. V. Flechter and the Flechter Carbureter Co. of New York has been dismissed by Judge Hand of the United States district court. The complaint charged infringement by the Flechter company of the patents owned by the Stromberg company covering the two-spring principle of carbureter construction. Albert M. Austin, attorney for Flechter, made out a strong case in defense and it was on his motion to dismiss, concurred in by the legal representatives of the complainant, that the court acted. The defense was that the principle involved in the suit lacked patentable novelty.

STROMBERG SUES PARKER

Chicago, June 11—Suit was filed in the United States district court for the northern district of Illinois, on Monday, by the Stromberg Motor Devices Co. against Leonard A. Parker of Chicago, for infringement of Perkins patent No. 731,218, which is said to be the pioneer patent on the two-spring adjustment of the carbureter valve. This patent is owned by the Stromberg Motor Devices Co., which also owns the Goldberg patent, which is more specific in its terms, but which also is said to be infringed by the construction of the Flechter carbureter. The suit upon the Perkins patent now brought by Stromberg does not prevent a subsequent suit against the same device for infringement of the Goldberg patent.

REPUBLIC CASE IN COURT

New York, June 12—Special telegram—Order for a final decree in the case of the Republic Rubber Co. against Morgan & Wright, in which its decision was favorable to the latter, has been sent down by the United States circuit court of appeals. The decree itself will follow as a matter of course unless a motion to reargue the case is entertained.



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Financing the Truck Buyer

AMONG the many problems that truck dealers and manufacturers have to contend with is that of financing the prospective buyer. From every city in the country comes the question of how to finance the deal. The grocer, the butcher, the small furnishing house, the retail florist and a score of other concerns that operate on small capital have watched the motor truck business and know of its economy and superiority over horse service, but they cannot get enough ready cash to buy the motored vehicle.

THIS new obstacle in the truck field is one that has existed in many other lines for generations. It is well known that the retail grocer in the semi-residential portion of a large city operates on small profits and can only exist by turning his capital over every few weeks. With such a merchant sufficient ready cash to buy a 1,000-pound delivery wagon is not a too common condition and consequently the energetic truck salesman has to face the problems of finance in addition to that of explaining the field of operation of the truck, its superiority over horse vehicles and the superiority of his particular vehicle over other makes.

THIS finance problem has been up for several months and already not a few of the makers of low-priced motor deliveries have wrestled with it. What the grocer, the butcher, the small florist, the baker and others want is time. They are able to pay perhaps one-third or a little more in cash and want to give notes at different periods for the remainder. One or two makers of such vehicles have been taking such notes, but while this can be done through a factory branch, it is impossible for the dealer to do it, who has to pay his deposit with order and cash on delivery of the machine. For him to turn over to the note field will call for a re-adjustment of his own finances, which cannot be done without the factory in turn having to change its financing policies. All told, this one little problem is going to be a big factor in the course of a year or 18 months and those factories building light delivery wagons and hoping to use big deposits and cash-on-delivery money in pushing through the product in the factory will have to make some alterations in their plans.

SOME dealers prefer to take mortgages on the machines in preference to notes. Many buyers object to the legal publicity that must accompany such a purchase. With others the judgment note is used and other varied means are resorted to. No matter what the method pursued, the maker cannot overlook the one big fact that if he wants to reach many of such buyers he has to devise some credit system. The banks were looked to as a probable solution, it being expected that many of them would be willing to advance the necessary funds to a small merchant on his cash sales. A canvass of several dozen banks has brought forth the fact that they will not advance money to these merchants for the purchase of a motor delivery wagon. The bank deposit of these companies is in many cases almost a negligible quantity and in view of this the banks are standing firm on the matter. Several of the bank cashiers have stated that they are perfectly willing to advance money where the business of the house with the bank has been such as to warrant it, but in so many cases

where the banks have been approached to advance funds the connections of the firm with the bank have not been sufficiently satisfactory to justify such.

NOT only does the question of finance affect the small merchant, but it also affects the big industrial house that will require a score or more of trucks to replace its present horse equipment. Where a concern orders fifty 3-ton trucks there is an outlay of \$150,000. If such a deal is cash it means more or less financing. These industrial houses when buying other machinery pay partly in cash and give a series of notes maturing at different periods over a year or more. They want to buy trucks on the same plan. The big truck maker will have difficulty in this. He has put all of his ready cash into experimental work, into factories and into equipment, and if he in turn expects to give time in payment he will have to make new purchasing arrangements with many from whom he gets his raw materials and parts. This situation is new with the motor industry. It did not present itself in the pleasure car field, largely because the sales were individual and the buyer invariably had the ready cash, because if he did not have sufficient ready cash to purchase the machine it was a certainty he would not have enough to operate it.

WITHOUT sufficient cash to purchase a motor truck or delivery wagon many will be saying why does not the buyer remain content with the horse. The answer to this question is one of the biggest commendations to the motor vehicle. The grocer, the butcher, the dyer and cleaner, the baker, the clothing merchant, and hosts of others expect that the motor vehicle will cost more to operate than their present horse equipment, but they know from the experience of others that they can increase their business with the motor vehicle. That with it they can give quicker delivery, which is one of the great essentials of the present day. They know that with the motor truck the radius of sales area is increased. Up to the present the limit of the horse operation has been the limit of the merchant's business. He has refused to sell his goods beyond certain boundaries from his store; the cost of delivery would be too great. The merchant using a one-horse wagon finds that he must buy another horse and even then he cannot cover the area he wants to. The merchant with two one-horse wagons finds that he must have one horse in reserve in order to care for his trade, and even with the third horse he can scarcely give the service demanded and cannot give the service that his rival with a motor furnishes. Finally, after having gone over the entire problem, there remains but one course, namely, that of buying a motor vehicle suitable for his needs.

IT IS open to serious question if there is any bigger field present in the motor realm than this supplying the small merchant with a suitable car. It is a big problem; it involves many factors in finance; it is a job for a big factory; it is a job for the biggest men in the industry, and is a job that will amply repay the maker who solves it to the best benefit of all.

Congress Discusses the Metal Schedule

WASHINGTON, D. C., June 10—The following excerpts from a speech delivered in the senate by Senator Reed Smoot, of Utah, one of the senate leaders, on the metal schedule of the pending tariff bill, is of vital interest to the motor car industry:

The motor industry in the United States is a magnificent tribute to the success of the protective-tariff system. So recent as 1897, when the Dingley bill was enacted, the motor industry had not reached sufficient importance in this country to be even mentioned by name in that act. Accordingly, it was given a protection of 45 per cent under the basket clause. At that time about the only motor cars used in this country were of foreign make, and they were so expensive that only a few of the very rich could afford such a luxury. American inventors and manufacturers then, busy and with the aid of the tariff, which protected them from the cheaper labor of Europe, have built up an industry with a quarter of a billion dollars invested in the equipment of its manufacturing plants and whose products, including finished parts, in 1910 were valued at \$254,580,000 as compared with \$98,018,911 in 1905. It is a fact well known to all that the growth of the American motor industry has been accomplished by a marked reduction in the price of motor cars, so that now these machines are within the reach of any person of average means. A most important factor in the motor industry is its recent development of motor trucks, which are revolutionizing the means of transportation, especially in towns and cities of the United States. These trucks are reducing the cost of such transportation, in which economy the American consumer will have a large share.

The pending bill reduces the duty on motor cars from 45 to 40 per cent. This is not a very great reduction, but it does not appear that there is any reason whatever for making even this change in the present tariff. When the Payne bill was under consideration, an Italian motor concern asked that the duty on motor cars be reduced from 45 to 33 per cent. This indicated that that foreign company believed it could continue to maintain its factory in Italy and ship its products to America at a satisfactory profit with a difference of but 12 per cent in tariff. It is entirely possible that the proposed reduction of 5 per cent would be equally as advantageous to the foreign manufacturer of motor cars.

The present tariff has compelled a number of foreign manufacturers to establish factories in this country. Not many years ago a large proportion of the accessories and parts of the motor car such as magnetos, springs, frames, gears and castings were manufactured in Europe. Nearly all of these items are now American-made, giving employment to thousands of American persons, who receive from one-third to one-half more than men employed in the same class of work in foreign countries.

The Payne bill maintained the tariff on motor cars at 45 per cent, as a result of which the Fiat company has erected an extensive motor car factory at Poughkeepsie, N. Y., employing American labor at American wages for the manufacture of cars which they sell in this country. This is the same company which wanted tariff reduced to 33 per cent so that it might continue to supply the American market from its factory in Italy, where cheaper labor materially lessened the cost of production. People who can afford to buy motor cars can afford to pay enough for them to maintain the high standard of American wages. This can only be done by keeping the tariff at such a point as to prevent products of cheaper foreign labor supplanting those of American factories.

As in numerous other instances, the pending bill completely ignores the widely varying labor cost entering into the production of chains, by providing a single ad valorem duty for all kinds of iron and steel chains without any regard whatever for their method of manufacture.

BURMAN WINNER AT PHILADELPHIA

Philadelphia, Pa., June 8—Bob Burman did as it was expected he would do—lowered the local 1-mile circular dirt track record at the spring race meet of the Quaker City Motor Club held today at the Belmont Driving park, Narberth, negotiating the circuit in :54.26, as against the

Senator Smoot of Utah Touches on Points Interesting Motor Industry

existing time of :57.70 made last year at the old Point Breeze race track by Ralph de Palma. He also romped away with two straight heats in the contest for the Remy



June 15—Track meet; Belmont Motor Club; Narberth, Pa.

*June 18-20—Reliability run; Automobile Club of Washington, Washington, D. C.

*June 20—Algonquin hill-climb. Chicago Motor Club, Algonquin, Ill.

June 20—Monthly meeting of S. A. E., Indianapolis branch.

*June 20-22—Reliability run; Pine Tree Motor Contest Association, Portland, Me.

June—Reliability run; Auto Club of St. Louis, St. Louis, Mo.

June—Hill climb; Maine Automobile Association, Portland, Me.

June 25-26—Grand prix road race; Dieppe, France.

June 27-28—Interclub match; Chicago Athletic Association and Chicago Automobile Club.

June—Track meet; Baltimore, Md.

June 27-29—Summer meeting Society of Automobile Engineers, Detroit, Mich.

July 4-5—Track meet; Taylor Automobile Club, Taylor, Tex.

*July 4-6—Beach meet; Old Orchard Automobile Association, Old Orchard, Me.

July—Reliability run; Maine Auto Association.

July—Reliability run; Cleveland News.

July 4—Track meet; Petersburg, Ind.

July 5-6—Road race; Montamara Festo Auto Com.; Tacoma, Wash.

July 10-20—Canadian Industrial Exhibit; A. C. Emmett, manager motor section; Winnipeg, Can.

July 15-18—Cleveland News reliability run.

July 15-20—Reliability run; Wisconsin State Automobile Association, Milwaukee, Wis.

July 22-27—Cadillac celebration at Detroit, Mich.

July 27—Reliability run; Buda Pesth to Constantinople.

*August 8-10—Galveston beach meet; Galveston, Tex.

*August 24—Road races; Chicago Motor Club, Elgin, Ill.

*September 2—Speedway meet, Indianapolis, Ind.

*September—Commercial vehicle run; Chicago Motor Club.

September 17—Vanderbilt and Pabst cup road races, Milwaukee, Wis.

September 21—Grand prix and Wisconsin Motor cup road races, Milwaukee, Wis.

September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.

September 23-Oct. 3—Rubber show, Grand Central palace, New York.

September 26-Oct. 6—Exposition agricultural motor cars, Bourges, France.

September—Track meet; Universal Exposition Co., St. Louis, Mo.

*October 7-11—Chicago Motor Club reliability run, Chicago.

October 12—Track meet; Rockingham park, Salem, N. H.

November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.

December 7-22—Paris salon.

January 4-11, 1913—Cleveland show.

January 11-18—New York show.

January 20-25—Philadelphia show.

Jan. 27-Feb. 1—Detroit show.

February 1-8—Chicago show.

February 10-15—Minneapolis show.

February 17-22—Kansas City show.

Feb. 24-March 1—St. Louis show.

March 3-8—Pittsburgh show.

March 8-15—Boston show.

March 17-22—Buffalo show.

March 24-29—Indianapolis show.

*Sanctioned by A. A. A.

grand brassard and trophy, and otherwise cleaned up. The only event in which he was entered and failed to win was in the 5-mile free-for-all handicap, captured by P. J. Thebaud, Mercer, with 1 minute handicap. Burman, starting from scratch, was second. His work was easily the feature of the afternoon. Summaries:

Ten miles, division 2 C, non-stock, 161-230 class—Bauer, Buick, won; Duval, Flanders, second; Smith, Empire, third. Time, 11:34.08.

Six miles, division 3 C, non-stock, 231-300 class—Thebaud, Mercer, won; Menker, Klinekar, second. Time, 6:20.58.

Five miles, division 4 C, non-stock, 301-450 class—Menker, Klinekar, won; Blockson, Stutz, second; Thebaud, G. J. G., third. Time, 5:09.99.

Ten miles, division 5 C, non-stock, 451-600 class—Burman, Cutting, won; Earle, American Traveler, second. Time, 10:15.14.

One mile for track record—Burman, Benz. Time, :56.24.

Three-mile free-for-all, first heat—Burman, Ohio, won; Matson, Benz, second. Time, 2:56.81.

Second heat—Burman, Ohio, won; Meneghetti, Mercedes, second. Time, 3:00.82.

Five miles in second speed—Daird, Lion, won; Irvin, Otto, second. Time, 6:28.86.

Five-mile handicap—Thebaud, Mercer, won; Burman, Ohio, second; Menker, Klinekar, third. Time, 5:10.76.

Twenty-five miles, non-stock—Burman, Cutting, won; Earle, American Traveler, second; Rainey, Ohio, third; Gosnell, Klinekar, fourth. Time, 25:53.42.

MEET AT SALEM, N. H.

Salem, N. H., June 10—The meet at Rockingham park today attracted a crowd of 15,000 spectators, the feature of the card being a 50-mile race that was won by Le Cain in a Stutz, with Harry Grant, Berkshire, second. In all six races were run, with the following results:

ONE MILE TIME TRIALS

Car	Driver	Pls. Dis.	Time
Bianchi	Basle	590	1:03%
Chadwick	Hersey	707	1:05%
Stutz	Le Cain	399.9	1:05%
Berkshire	Grant	379.6	1:07%
Jackson	Cobe	354.6	1:11%
Lexington	Esleek	280.6	1:14%
Hudson	Willis	*	1:15%
Metz	Cathhart	*	1:18%

*Not given

Five miles, class C, 301 to 450 displacement, non-stock—G. C. Jessup, Buick, won; J. H. Le Cain, Stutz, second; Harry Grant, Berkshire, third. Time, 5:37%.

Five miles, invitation match race, amateur—John J. Kingsley, Thomas, won; Nelson Slater, Bianchi, second; W. Bigelow, Buick, third. Time, 5:51.

Ten miles, free-for-all, handicap—J. F. Esleek, Lexington, 3:06; A. J. Willis, Hudson, 3:42, second; Leland Hersey, Chadwick, 1:00, third. Time of winner, 13:22%.

Twenty miles special match race—Won by Harry Grant, Berkshire; Harry Cobe, Jackson, second. Charley Basle, Chadwick, did not finish. Time, 25:12%.

Fifty miles, class E, 301 to 600 displacement—J. H. Le Cain, Stutz, won; Harry Grant, Berkshire, second. Buick, Lexington, Bianchi, National and Jackson did not finish. Time, 1:20.00. Timers gave Hudson 13:33%; Chadwick, 13:28%. Scorers gave Hudson second place and Chadwick third. A. A. A. official gave Buick finish flag at ninth mile.

WESTGARD STARTS LONG TRIP

New York, June 10—A. L. Westgard, representative of the A. A. A. and United States department of public roads, left this morning to make a trip across the continent, with Seattle his objective point. This is one of the three transcontinental pathfinding trips Mr. Westgard expects to make this summer. Mr. Westgard is accompanied by Mrs. Westgard, and Heinie Scholler is driver of the Pathfinder 40 in which the trip is being made.

Hemery Stars in Big French Hill Climb



LION-PEUGEOT TURNS OVER IN FRENCH LIMONEST CLIMB

PARIS, May 28—Victor Hemery, in a grand prix Lorraine-Dietrich specially built for the Dieppe event in June, was the star performer in the two hill-climbs organized by the Automobile Club of the Sarthe on Whit Sunday and Monday. On the first of the two events, a kilometer $\frac{5}{8}$ -mile climb on a 6 per cent gradient, with a standing start Hemery beat all comers with 31 $\frac{1}{2}$ seconds, his speed towards the top of the hill being over 90 miles an hour. On the second day, on another hill, having about the same gradient, but a length of 2 kilometers—1 $\frac{1}{4}$ mile—he had to suffer defeat at the hands of Ettore Bugatti, driving his own four-cylinder car of 3.9 by 6.2 inches bore and stroke. The Bugatti is an unusually light car and in getting away from a standing start it had an advantage over the Dietrich.

Hemery's grand prix model is a special racing type, of which four have been built, measuring 6.2 by 7.8 inches bore and stroke, and is the largest of all the cars prepared for the French grand prix. Its speed on the level is 110 miles an hour.

On the 1-kilometer climb Gasté with a six-cylinder racing Rossel was the most

dangerous competitor of the Dietrich. It climbed in :32 $\frac{1}{2}$; it did not start for the 2 kilometers. Bugatti covered the kilometer in :33 $\frac{1}{2}$, and on the second climb got up the 2-kilometer grade in 1:13, beating the Dietrich by 2 $\frac{1}{2}$ seconds. Barriaux, in

Driving Lorraine-Dietrich, Noted Pilot Makes Fastest Time in Sarthe Event

the 3-liter Alcyon racer prepared for the grand prix, made 41 $\frac{1}{2}$ for the kilometer and 1.28 for the double distance. American firms were represented by Mitchell and Ford, but in neither case did they win in their class, and both laid complaints that their competitors did not comply with the cylinder dimensions. The following is the summary, class distinctions being ignored for the racers:

Car and Driver	Kilometer	Kilometers
Lorraine-Dietrich, Hemery...	:31 $\frac{1}{2}$	1:15 $\frac{1}{2}$
Rossel, Casté.....	:32 $\frac{1}{2}$	1:46
Bugatti, Bugatti.....	:33 $\frac{1}{2}$	1:46
Hispano-Sulza, Deryn.....	:40 $\frac{1}{2}$	1:30 $\frac{1}{2}$
Alcyon, Barriaux.....	:41 $\frac{1}{2}$	1:28
Piccard-Pictet, Tournier.....	:46 $\frac{1}{2}$	1:32
Singer, Herbert.....	:47 $\frac{1}{2}$	1:37
Bugatti, Dillon Kavanagh.....	:49	1:37 $\frac{1}{2}$
Lion-Peugeot, Sauvage.....	:52 $\frac{1}{2}$	1:39
Apollo, De Viscaya.....	1:08	2:12
Bugatti, Frederick.....	1:48 $\frac{1}{2}$	1:40
CLASS 1		
Car, Bore and Stroke, Driver	Time	Time
Mercedes, 5.1 by 7, Rigaud.....	1:02 $\frac{1}{2}$
CLASS 2		
Holland-Pilain, 4.3 by 6.3,		
Guyot.....	:39 $\frac{1}{2}$	1:31 $\frac{1}{2}$
Mitchell, Davalis.....	1:02 $\frac{1}{2}$	2:18 $\frac{1}{2}$
CLASS 3		
Peugeot, 3.9 by 6.2, Grilliat.....	:55 $\frac{1}{2}$	1:52 $\frac{1}{2}$
CLASS 5		
Singer, Herbert.....	:53 $\frac{1}{2}$	1:48 $\frac{1}{2}$
Metallurgique, 3.5 by 5.5,		
Leviux.....	1:27	2:38
CLASS 6		
Chenard-Walcker, 3.1 by 5.9,		
Delaroche.....	1:02 $\frac{1}{2}$	2:16
Ford, Boulay.....	1:04	2:20
Lion-Peugeot, Blanchard.....	1:48 $\frac{1}{2}$	2:41 $\frac{1}{2}$
Renault, Morin.....	1:55	
CLASS 8		
S. C. A. R., 3.1 by 5.1, Gag-		
nard.....	1:09	2:25 $\frac{1}{2}$
Peugeot, Blanchard.....	1:41 $\frac{1}{2}$	4:40
CLASS 10		
Bugatti, 2.3 by 3.5, Dillon		
Kavanagh.....	:51 $\frac{1}{2}$	1:46 $\frac{1}{2}$
Ponette, Grandvaud.....	:58	1:57
Lion-Peugeot, Morel.....	1:04 $\frac{1}{2}$	2:08 $\frac{1}{2}$
Pilain, De Milleville.....	1:08 $\frac{1}{2}$	2:25 $\frac{1}{2}$
D. F. P., Delage.....	1:10 $\frac{1}{2}$	2:18 $\frac{1}{2}$
Humber, Menard.....	1:17 $\frac{1}{2}$	2:34 $\frac{1}{2}$



CHICAGO MOTORISTS LUNCH IN DEER PARK IN INTERCLUB MATCH

Chicago Motor Club Wins Team Match

Illinois A. C. Beaten in Reliability to La Salle, Ill. and Return

CHICAGO, June 8—The local contest season was opened this week when the Chicago Motor Club and the Illinois Athletic Club participated in a team reliability match to La Salle, Ill., and return in which thirty-five cars participated, the Motor club having nineteen of them. The affair was run under grade 3 and penalizations were made only for work done on the road and for being late at controls. It was a 2-day affair and although the I. A. C. led at the end of the first day the Motor club nosed out a victory—28.33 to 70, the fractional penalization being given because of the difference in the size of the two teams.

In most cases the demerits were given for stalled motors, but Paterson's big penalty came following an accident in which his rear axle was damaged. Regelin withdrew after the first day when he hit a bridge near Joliet, almost going into the canal. Schillo, who had considerable tire trouble the first day, also pulled out by agreement with Regelin, so the score of neither was counted.

The most enjoyable feature of the match was the entertainment furnished by the motorists of La Salle, who met the Chicagoans at Deer park, giving them a barbecue in a beautiful glen, then taking them to Starved Rock for an inspection of the new state park. In the evening at La Salle the Chicagoans again were entertained at the Elks' club. The first day's journey was 115 miles in length and 109 miles the second day.

The interclub team match is essentially a Chicago institution and there are three more



BAD TURN IN FRENCH HILL-CLIMB AT LIMONEST

of them scheduled for this summer. Next the program is the fifth annual match between the Chicago Athletic Association and Chicago Automobile Club, set for June 27-28, to Milwaukee and return. The summary of the La Salle match is as follows:

CHICAGO MOTOR CLUB

No.	Driver and Car	First		Total
		Day	Day	
1	Briggs, Chalmers.....	0	2	2
3	DeLong, Chalmers.....	2	2	4
5	Sinsabaugh, Velle.....	0	0	0
7	Stalnaker, W. T., Premier.	0	0	0
9	Melcher, Chalmers.....	21	0	21
11	Van Sicklen, Apperson...	0	0	0
13	Schillo, Mercer.....	Withdrawn		
15	Hirsch, Pierce-Arrow....	0	0	0
21	Kavanaugh, Midland....	1	0	1
23	Lee, Krit.....	0	0	0
25	Zimmerman, Stutz.....	0	0	0
27	Sackett, Midland.....	1	0	1
33	Brown, Velle.....	4	0	4
35	Simmons, Hupmobile....	0	0	0
39	Breakstone, Midland....	0	0	0
43	Gaidzik, White.....	0	0	0
45	Choate, Kisselcar.....	0	0	0
47	Githens, Everitt.....	0	1	1
51	Deagan, Pierce-Arrow....	0	0	0

Team total 34; fractional penalization 28.33 points.

ILLINOIS ATHLETIC CLUB

No.	Driver and Car	First		Total
		Day	Day	
2	Lewin, Chadwick.....	0	0	0
4	Iverson, Apperson.....	0	0	0
6	Cooney, Winton.....	0	0	0
8	Knowles, Alco.....	1	0	1
10	Gaushur, Bergdoll.....	0	0	0
12	Knab, Pierce-Arrow.....	0	0	0
14	Stein, Winton.....	0	0	0
16	Wolf, Locomobile.....	0	0	0
18	Wilson, Cadillac.....	0	0	0
20	Moore, Maxwell.....	1	0	1
22	Stewart, Buick.....	0	22	22
24	Regelin, Cadillac.....	Withdrawn		
26	Peterson, Maxwell.....	1	0	1
28	Caton, Overland.....	0	0	0
30	Bersbach, Mitchell.....	0	0	0
32	Paterson, Premier.....	0	45	45

Team total, 70 points.



VIEW FROM STARVED ROCK, SEEN BY CHICAGO MOTORISTS

Badgers Promise Racers Big Purses

Milwaukee to Hang Up More Than \$17,000 in Cash Prizes in the Vanderbilt, Grand Prix and Smaller Events—Distances for Each of Contests Set by the Promoters

MILWAUKEE, WIS., June 12.—Approximately \$17,000 in cash prizes has been hung up by the Milwaukee Automobile Dealers' Association for the four big road races, the grand prix, Vanderbilt, Pabst and Wisconsin motor cup contests, in Milwaukee on September 17 and 21. This amount is nearly \$5,000 more than offered by the Savannah Automobile Club for the double bill at Savannah last fall.

The prize list amounting to \$17,000 does not include a secret purse which will accompany the Pabst trophy. Colonel Gustave Pabst, the donor, has given the designer orders to incorporate in the hold of the big mug, running its entire length vertically, a tube just large enough in diameter to hold a \$20 gold piece. This tube will be filled by the colonel personally and no one will know just how much it contains until the winner himself removes the seal and counts the eagles. That it will be a good, big bit is evident from the fact that the Pabst trophy will stand about 4 feet high, not counting the base.

Vanderbilt Class C Event

While the official entry blanks for the four contests are not ready for issuance, the final proofs having been submitted to the A. A. A. and A. C. A. on Monday of this week, it is announced that entries for all races will close on Saturday, September 7, at midnight. This is 10 days before the running of the first events—the Vanderbilt and Pabst cup races, on September 17.

The official entry blanks will show that the race for the grand prix will be at 436.25 miles, or fifty laps of the 8.725 mile circuit. The entry fee for one car will be \$1,000; for two cars \$1,500, and for three cars, \$1,750. In addition to the Automobile Club of America's gold cup, there will be awarded to the winners the sum of \$6,500, distributed as follows: First, \$3,000; second, \$2,000; third, \$1,000, and fourth, \$500.

The Vanderbilt cup race will be run under the rules of the A. A. A., and will be a class C non-stock event, for cars of from 301 to 600 cubic inches piston displacement, at 305.375 miles, or thirty-five circuits of the 8.725 course. The entry fee will be: One car, \$500; two cars, \$800; three cars, \$1,000. The cash prizes, four in number, aggregate \$6,500, as for the grand prix, distributed as follows: First, \$3,000; second, \$2,000; third, \$1,000; fourth, \$500. This is the first time a cash prize has been offered for the winner of fourth place in the Vanderbilt.

The first race for the Pabst trophy,

which will be run in conjunction with the Vanderbilt, will be for class C non-stock cars, 231 to 300 cubic inches piston displacement, division 3C, at 218.125 miles, or twenty-five circuits of the course. The entry fees are: One car, \$250; two cars, \$400; three cars, \$500. The cash prizes will be awarded as follows: First, \$1,000; second, \$500; third, \$250, and fourth, \$125. In addition the Pabst trophy will contain a purse, the amount of which will not be known until the winning driver pries the sealed cover from the tube in the cup. It is likely that the winner of the Pabst will receive approximately as much for his victory, in cash, as the winner of either the grand prix or Vanderbilt.

Wisconsin Motor Race

The Wisconsin Motor challenge trophy race will be for class C non-stock cars, division 2C—161-230 cubic inches piston displacement, at 174.5 miles, or twenty circuits of the course. It will be run coincidentally with the grand prix and the entry fee is: One car, \$250; two cars, \$400; three cars, \$500. The cash prize list is the same as for the Pabst, the purses being: First, \$1,000; second, \$500; third, \$250; fourth, \$125.

The grand prix will be a free-for-all, non-stock chassis, without restriction as to piston displacement, price or quantity produced.

It is expected that the A. A. A. will issue sanctions for the three contests coming within its jurisdiction, before the end of the week. As concerns the A. C. A., the race has already been officially awarded to the M. A. D. A. William K. Vanderbilt, Jr., who was appointed chairman of the contest board of the A. C. A. last week, will be in Milwaukee with Henry B. Sanderson and other representatives of the A. C. A. about June 20 to complete arrangements.

Awarding Road Contests

Contracts for the rebuilding of the course will not be awarded before the end of this week because of the large amount of detail work incident to the scheduling of bids for the various divisions of the work. On Tuesday morning Chairman August A. Jonas, of the racing committee, and Bart J. Ruddle, race secretary of the M. A. D. A., and members of the association, went to Chicago and thence to Elgin to inspect the noted stock chassis course. Six carloads of Milwaukee men directly interested in the big races at Milwaukee in September made the trip.

The citizens' committee on finance is making excellent progress in the work of

raising a guaranty fund of \$50,000 and no difficulty is anticipated in completing the amount required by the promoters.

WASHINGTON RUN POSTPONED

Washington, D. C., June 8.—The annual endurance run of the Automobile Club of Washington under grade 3 rules has been postponed from June 11-13 to June 18-20. This action was taken in order to secure additional entries. The work of blazing the route of the run was completed June 4, when the pathfinders in a Cole arrived in Washington after laying out a 436-mile route embracing Hagerstown, Md., Harrisburg, Allentown, Philadelphia, Wilmington, Del., and Baltimore. The noon stops will be in Hagerstown, Allentown and Havre de Grace, while the night stops will be in Harrisburg and Philadelphia. It is expected about twenty-five cars will take part in the run.

GEORGIAN SCOUTS BUSY

Atlanta, Ga., June 6.—The scout cars of the tour around Fulton county completed their first day's work today and mapped out 110 miles of the 150-mile tour that will be held soon, probably July 4. The tour was a revelation. Though Fulton county, which includes the city of Atlanta, is only a medium-sized county as counties go in the south, it furnished diversified scenery to an extent that was amazing. And more than that, it furnished 150 miles of virtually perfect roads, with little or no backtracking. Two cars were used for the scouting, one carrying the superintendent of country road work, two county commissioners, and the engineer of the county commission. The other carried newspaper men. In a few days the final 40 miles of the tour will be scouted out and then a route book will be given, which will present an ideal tour of Fulton county. It will not be surprising if 200 cars take part in the tour.

HOOSIERS MODIFY TOUR ROUTE

Indianapolis, Ind., June 10.—The officers and board of directors of the Indiana Automobile Manufacturers have approved the route for the second annual four-states tour, after it had been slightly modified and also approved the maps, rules and other matter going into the route book. The route for the tour covers 1,283.9 miles through Ohio, West Virginia and Kentucky, including nearly 300 miles in Indiana. The tour will be well advertised, as copy will be placed by the I. A. M. A. in newspapers along the route and 5,000 one-sheet posters will be hung in the various towns along the route. The itinerary in revised form is as follows:

July 9—Indianapolis, Kokomo, Peru (noon), Wabash, Huntington and Fort Wayne.

Studebaker Owners Visit Grand Canyon

July 10—Fort Wayne, Van Wert and Lima.
 July 11—Lima, Findlay, Fostoria, Fremont (noon) and Tiffin.
 July 12—Tiffin, Bucyrus, Mansfield (noon), Ashland, Barberton and Akron.
 July 13 and 14—Tourists rest in Akron.
 July 14—Akron to Canton.
 July 15—Canton, Massillon, Canal Dover, New Philadelphia, Cadiz (noon) and Wheeling, W. Va.
 July 16—Wheeling, Cambridge, O. (noon), New Concord and Zanesville.
 July 17—Zanesville, Newark and Columbus.
 July 18—Columbus, Lancaster, Circleville and Chillicothe.
 July 19—Chillicothe, Waverly and Portsmouth.
 July 20—Portsmouth, Ironton, Coal Grove, Ashland, Ky., Cattslettsburg, Kenova, W. Va., and Huntington, W. Va.
 July 21—Tourists rest in Huntington.
 July 22—Tourists take boat to Maysville, Ky., from Huntington at 3 a. m., Maysville (noon), Paris and Lexington.
 July 23—Lexington, Frankfort, Shelbyville and Louisville.
 July 24—Louisville, New Albany, Ind., Scottsburg, Seymour, Columbus (noon), Franklin and Indianapolis.

The Henderson was the first car to present an application blank accompanied by a paid entry to the tour.

WHITRIDGE A. C. A. PRESIDENT

New York, June 10—At the meeting of the board of governors of the Automobile Club of America, Frederick W. Whitridge was elected president to succeed Henry Sanderson, whose term expired. Henry Evans was elected vice-president to succeed George W. Perkins, and also made chairman of the executive committee. Other officers elected were: Edward Shearson, second vice-president; Henry R. Taylor, third vice-president; W. A. Edwards, secretary; Dudley Olcott, treasurer; J. P. Morgan, Jr., chairman, committee on foreign relations.

MOTOR VETERAN DIES

Boston, Mass., June 10—Captain A. C. Norcross, for whom it is claimed the distinction of being one of the first inventors of motor cars in this country, died suddenly of heart failure at his home at Revere, Mass., last Sunday. In 1865 Captain Norcross, who was then living in Boston and employed as a watchmaker, being of an inventive turn of mind, built a steam motor car which he ran on the streets of Boston very successfully for some time.

BUFFALO'S ORPHANS' DAY

Buffalo, N. Y., June 10—Three thousand orphans had their annual day last Thursday in Buffalo and they were taken in 275 motor cars, including sixteen 2-ton motor trucks, around the city, including the Carnival Court, where all amusements were thrown open to the youngsters.

PICNIC FOR ORPHANS

Grand Rapids, Mich., June 10—About 200 children from the D. A. Blodgett Home for Children and St. John's Orphan asylum enjoyed the seventh annual picnic of the orphans which was given under the auspices of the Grand Rapids Automobile Club. Forty cars carried the little ones to the picnic grounds near Ada.

Twenty-two Cars Take Part in Sociability Run That Goes Out of Phoenix, Arizona—Eleven Taking Part in Actual Contest—Motorists Entertained in Towns on the Route

PHOENIX, ARIZ., June 7.—With twenty-two Studebaker cars and 106 persons participating, Arizona's first sociability run is in progress. Bound for the Grand canyon, the cars left Phoenix last Tuesday morning, and they arrived at the Grand canyon last night. Some trouble was encountered the first day, on the road between Phoenix and Prescott, but beyond that point there has been scarcely a mishap.

Only seven of the cars arrived in Prescott before 12 o'clock Tuesday night. A number ran out of gasoline on Copper Basin hill, 18 miles south of Prescott. A rescue car laden with fuel was sent out from Prescott at 1 o'clock Wednesday morning. Daylight was beginning to peep over the eastern hills before the last car rolled into Prescott.

Oddly enough, a repair car was the only one that was disabled by anything except a puncture or shortage of gasoline. The driver gave up his lights to another machine and in the darkness he ran off the road into a gully, breaking two springs.

Eleven cars are entered in the run under the sociability rules of the A. A. A., to compete for the silver cup offered by the Studebaker corporation. They were given 13 hours to make the journey to Prescott. The press car, pacemaker and three of the eleven machines finished within that time. Graham Reibling of Prescott, driving an E-M-F, made the best record, covering the 130 miles in 10 hours 47 minutes. A. D. Aiken of Wickenburg did 12 hours 10 minutes, while John Northcutt of Phoenix negotiated the distance in 12 hours 53 minutes. Both drove E-M-F cars. Several miles out of Prescott the leading cars were met by Prescott motorists, who escorted them into the city. There the leaders were greeted by a brass band.

In the expectation that all the cars would arrive early in the evening the people of Prescott had arranged an elaborate entertainment in honor of the travelers. The entertainment, which was in the nature of a smoker and spread, was held in the capacious quarters of the Yavapai Club. Addresses on motoring and good roads were delivered by T. G. Norris, president of the Good Roads Association of Arizona; Paul Burks, president of the Prescott Auto Club; Dr. John W. Flinn, president of the Prescott Chamber of Commerce; L. J. Ollier, Pacific coast sales manager of the Studebaker Corporation; Eugene B. O'Neill of Phoenix and Harry Heap of the Yavapai county board of supervisors.

The road from Phoenix to Prescott is the most difficult of the entire route.

There are many miles of smooth going across the mesas, but there is also much sand and in places gulleys have been washed across the road by spring rains. From Prescott on, however, the road is uniformly good. The citizens of Prescott did much work on the highway from their city to Ash Fork, preparatory to the coming of the motorists.

Wednesday afternoon the run to Ash Fork was made without incident. The night was spent there and the final lap to the canyon was covered the next day. Tomorrow the return trip, by way of Flagstaff, will begin.

Much interest in touring has been aroused in Prescott by this run. As a result a sociability run from that city to the canyon, open to all makes of cars, has been arranged.

BASS IN MAXWELL WINS

Harrisburg, Pa., June 10—The first recreation run of the season of the Motor Club of Harrisburg was held last Wednesday to the Lancaster motor car and horse show at Lancaster. Twelve cars contested in the hidden checker contest. The contesting cars were sent away from the motor club's headquarters at the Hotel Dauphin at 10 o'clock and they were checked en route at Elizabethtown and Mount Joy. L. F. Bass, in a Maxwell Mercury, won first place in the run. Robert McCormick, in a Mitchell, was second and J. D. Sankey third in a Cadillac.

OLD ORCHARD'S PROGRAM

Old Orchard, Me., June 8—The entry blanks for the motor races to be held on the beach here July 4, 5 and 6 were issued yesterday and the program as outlined calls for five races each the first 2 days and seven events the last day, making a total of seventeen. The distances are 5 and 10 miles in the greater number of events and each day's program ends with a 100-mile race. The beach will be in better shape this year, as the officials have started to stake out a course that will give as much mileage as possible consistent with safety. The course will be approximately about 3 miles long. Prizes to the value of about \$4,000 will be given for the events.

TO IMPROVE BOSTON PARKS

Boston, Mass., June 10—The Massachusetts legislature has passed and Governor Foss has signed a bill authorizing the metropolitan park commission to spend \$200,000 a year for the next 5 years, or \$1,000,000 in all, on the parkways within the metropolitan district around Boston.

Tacoma Races Again on the Schedule

Washington Motorists Decide to Run Road Events Next Month and Start Preparing Course—Entries Already Received from Several Notable Drivers

TACOMA, Wash., June 9—The Montemara feste road races, scheduled for July 5-6, have been restored to the motor calendar and the committee again are actively at work.

Great progress was made on the course during the past week. Many of the little hummocks which marred the otherwise naturally level highways have disappeared entirely. A hundred men with half as many plows and teams have been put on the work. The mile and a half straight-away on which the grand stand will be built next week has passed through the finishers' hands and is now ready for the final coating on which the cars will run.

Not less important than the advancement of the road work is the receipt of entries for the cars that will compete on July 5 and 6. Four entries were sent in during the past week from the northwest, two of

which were from Tacoma. The first to sign up was H. E. Stimpson of the American Automobile Co., Tacoma, who sent in a card for a Reo, driver unnamed, which will compete in event No. 1, for cars of less than 230 cubic inches. The first Tacoma car with a Tacoma driver to be named for the event is a model T Ford roadster, owned by W. C. Baldwin, manager of the Tacoma Ford agency. He has named Frank Bennett, one of his aides, as driver, and F. L. Gray, a one-armed mechanic.

From Vancouver, B. C., came the entry of a Cole racer owned by S. R. MacClinton, who has named Sebastian to drive it for him. He will appear not only in the free-for-all but in the 150-mile class C event as well. Hughie Hughes in the Mercer also is entered.

New committees to act in connection

with the races have been appointed, as follows: Transportation, telephone and telegraph, R. D. McDonald; awards, L. J. W. Jones; safety, policing and relief, Chester W. Hanson; course and grounds, Frank Allyn; buildings, D. D. A. Outcault.

The list of entries, as it stands to date, is as follows:

Fiat, 120 horsepower; driver, Caleb Bragg. This car, driven by David Bruce-Brown, won the grand prize race at Savannah, Ga., 1911.

Flat, 90 horsepower; driver not named.
Napier, 100 horsepower; driver not named.

Napier, 100 horsepower; driver not named.
Owned by J. Armstrong, of Los Angeles.

Simplex, 90 horsepower; driver not named.

Simplex, 70 horsepower; driver not named.
 Mercer, 70 horsepower; driver not named.

Mercer, 60 horsepower; driver not named.

Schact, 60 horsepower; driver not named.
Case, size not named: three to be entered.

Cole, 30 horsepower; driver, Sebastian.

Owned by S. R. MacClinton, Vancouver, B. C.
Reg. 30 horsepower: driver, Earl Jackson

Entered by American Automobile Co., Tacoma.

Reo, 30 horsepower; driver, Harry Krause, Los Angeles.

Ford, 22 horsepower; driver, Frank Bennett.

Tacoma. Entered by W. C. Baldwin, Tacoma.

In addition to these there are two

Stutz cars at San Francisco, one of which

Earl Cooper is scheduled to drive. The

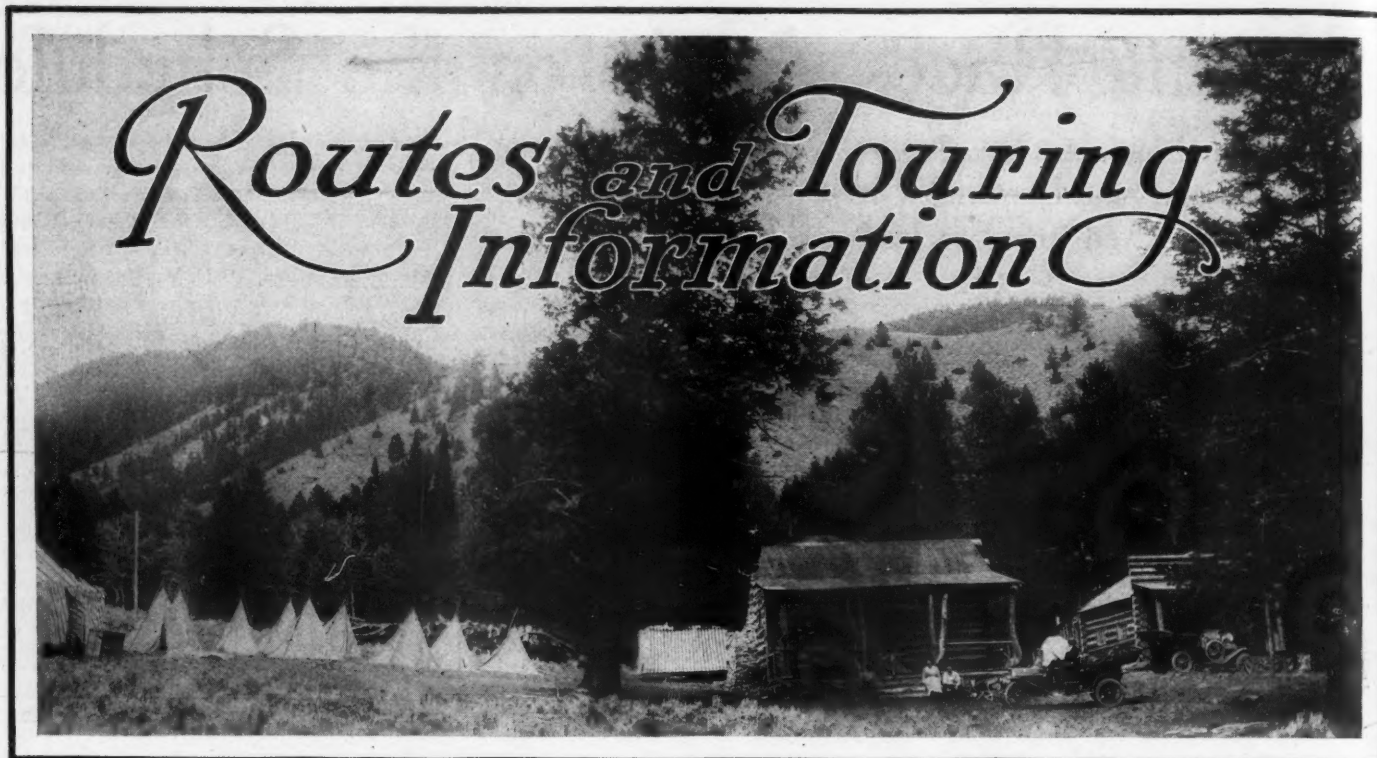
entry list closes June 28 and between now

and then the committee expects to receive

a number of further entries.

RACE AT INDIANAPOLIS WON BY JOE DAWSON IN NATIONAL AT SPEED OF 78.7 MILES PER HOUR

[illegible][illegible]



HOLM LODGE IN THE HEART OF THE BIG GAME COUNTRY

CODY, Wyo.—Editor Motor Age—Perhaps a few pictures and a short description of the most beautiful motor trip in any part of the Rocky mountains would be interesting to some cross-country motorists desiring to end the drive with a bit of the most striking route of all. I am sorry to say end, but the trip must end at the National park line as cars are not allowed in the park at this time, though I think the time is near when we unfortunate motor car owners will gain admittance. The pictures were taken by the local photographer when the Park County Automobile Club made the annual trip to its mountain club-house near the Park line during the past summer. The trip was made without a mishap, only one puncture, and with nothing but pleasant memories of the trip.

There are only two practicable routes for tourists to come into the Big Horn basin proper, one from the south and the other from the north. The southern entrance, which is and will be the most used by cross-country tourists, leaves the national ocean-to-ocean route at most any point on the Union Pacific railroad in or near Cheyenne, Wyo. The route as drawn on the accompanying map is perhaps the most practicable one to take. The route, on leaving the railroad, takes one through a very interesting country for mountainous make-up, with plenty of water and just enough of what would look like bad lands to the tourist from the east who is used to field and fences every foot of the road. To us who have lived in this mountain country until we have become part of it the road is not so bad. Perhaps I should advise taking along some little extra gasoline and oil, also a can

Side Trip Into the Rockies

for water. One may expect the trip north through Wyoming to be no worse than some parts of the ocean-to-ocean trip over the now often traveled road through Colorado, Idaho and Nevada, and in many ways better; this end of the trip offsets all the hardships that may have been encountered en route. While motoring into this country is a new thing it is not a hardship and has been made by Chicago, St. Louis and Denver tourists with success, some of whom went back by the way they came, others shipped their machines back and a few sold their cars, which can be done with some reduction in price.

The Big Horn basin proper is larger than may be expected when first thinking of it; it is perhaps 150 by 200 miles and entirely surrounded by mountains. On different hunting trips I have been on mountain peaks from which the entire basin can be seen, a sight well worth the climb. On the east lies the Big Horn range, on the south the Owl mountains, on the west the Shoshone range which is really the backbone of the Rocky mountains proper, and on the north the Pryor mountains.

On entering the basin from the south, the best route now as the roads are, will be to leave the Northwestern railroad at Moneat and go north as drawn on accompanying map. The north entrance would be by way of Billings, Mont., or the small station of Toluca on the B. & M. railroad, following the old railroad grade until again striking the Billings-Cody branch. Either is rather good for mountain roads and good time can be made to Cody.

While Cody is the largest town in the basin there are many other towns where gasoline and oil can be bought and at Cody and Basin City a rather good garage will be found.

The real scenic part of the trip starts at Cody leading through the Shoshone canyon where the road is chiseled out of solid rock a good part of the way, sometimes hanging on to the sides of the cliff, and then taking a gradual grade down to the river at the bottom of the canyon, now and then over a rock bridge, and through tunnels cut in granite formation. Then starts the grand climb to the top of the great Shoshone dam, located and built by the government 8 miles from Cody and directly on the Park road. The dam is 328 feet high. I have often driven over this part of the route, as well as the rest of the trip of about 60 miles to the park line and never can I recall a trip when it was tiresome. I have often heard the expression from eastern parties that the trip through the canyon and over the dam was alone well worth the trip to Cody if for no other reason. The road through the canyon was built by the government and is entirely safe to travel.

After arriving at the top of the dam the road leads around the mountains on a grade which is very good and of striking beauty. On the left we have the great lake formed by the dam, reaching up the two branches of the Shoshone river for many miles. We now follow the north fork until we reach the end of the lake and begin to pass through splendid ranches one of the best of which is that of D. E. Hollister, the present president of the Park County Automobile Club. We also pass the ranches of Pat Kelly, R. G.

Miller, Fred Morris, and Frost and Richards Park tourists, after which we arrive at the real gateway or the upper canyon at the east entrance of the National park.

At this point we are struck by the remarkable beauty of two mountain points which seem to come down from the mountains proper on both sides to inspect every traveler passing this way. The very prominent pointed peak on the right has been justly called the Sentinel by some student of nature. At this point in the road we leave the broad valley and enter in among the evergreen pine trees which seem to invite slower travel to better enable one to enjoy the remarkable beauties of the trip. We pass the magnificent hanging rock or the Thousand-foot rock where the road is built in an overhanging mountain and soon after we arrive at Wapiti on the Elk Fork of the river. We do not linger long here as we are not tired and are anxious to see more of the beautiful and restful route. Every turn in the road has some new view in store for us until we arrive at the only road leading off from the main road, to Holm Lodge, just around the point on Libby creek.

After taking lunch and spending a few hours viewing this remarkable sight we again return to the main road and, passing wonder after wonder, we finally come to Pahaska tepee. Proceeding to the park line, 2½ miles distant, we find a soldier station with a notice stating that we cannot go farther with the cars.

The return trip may be made the same day, or the car can be garaged and a park trip of short or long duration by rig may be made following either the hotel route or camping in from 6 to 16 days. On the trip down we get the scenery from a different viewpoint, and if desired another road, leading on the south side of the Shoshone lake around to the south fork of the river, may be taken. The route leads through a ranching country until the starting point is reached.

The season for touring in this country starts about June 1 and lasts until after the hunting season which closes December 1. The park season starts about July 1 and closes September 15, at which time the hunting season starts. I may add that this is the best big game country in the United States. In 1911 about 200 elk were taken in and about Cody, saying nothing of numerous deer, bear, moun-

tain sheep and mountain lions, of which there are plenty. A large part of this game was brought in by motor cars.

The remarkable fact that only 2 years ago it was impossible for a car to travel over the park road and that now a number of machines make regular trips every day through the canyon and over the park road is to be accredited to the local people through private subscription and help of the government.—Gus Holm.

ENTERING CANADA

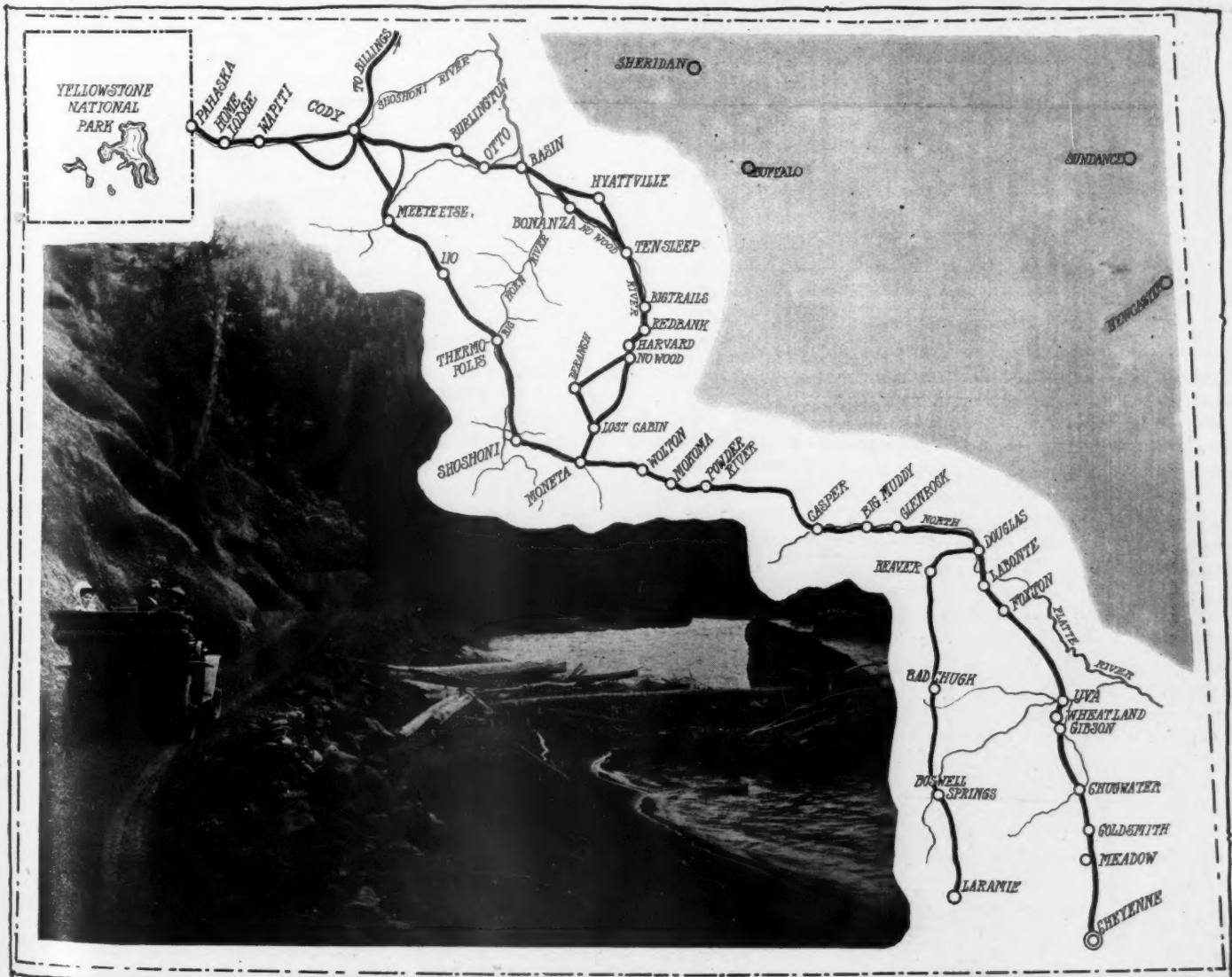
Bronson, Mich.—Editor Motor Age—Kindly inform me as to what the requirements are for a Michigan car to enter Canada. I only desire to make a short drive from Windsor to Leamington, a distance of only 35 miles or so.—C. L. Luce.

A touring privilege to the extent of 8 days is allowed in Canada this year, and it is expected that many tourists will take advantage of this new ruling and include Canada in their tour.

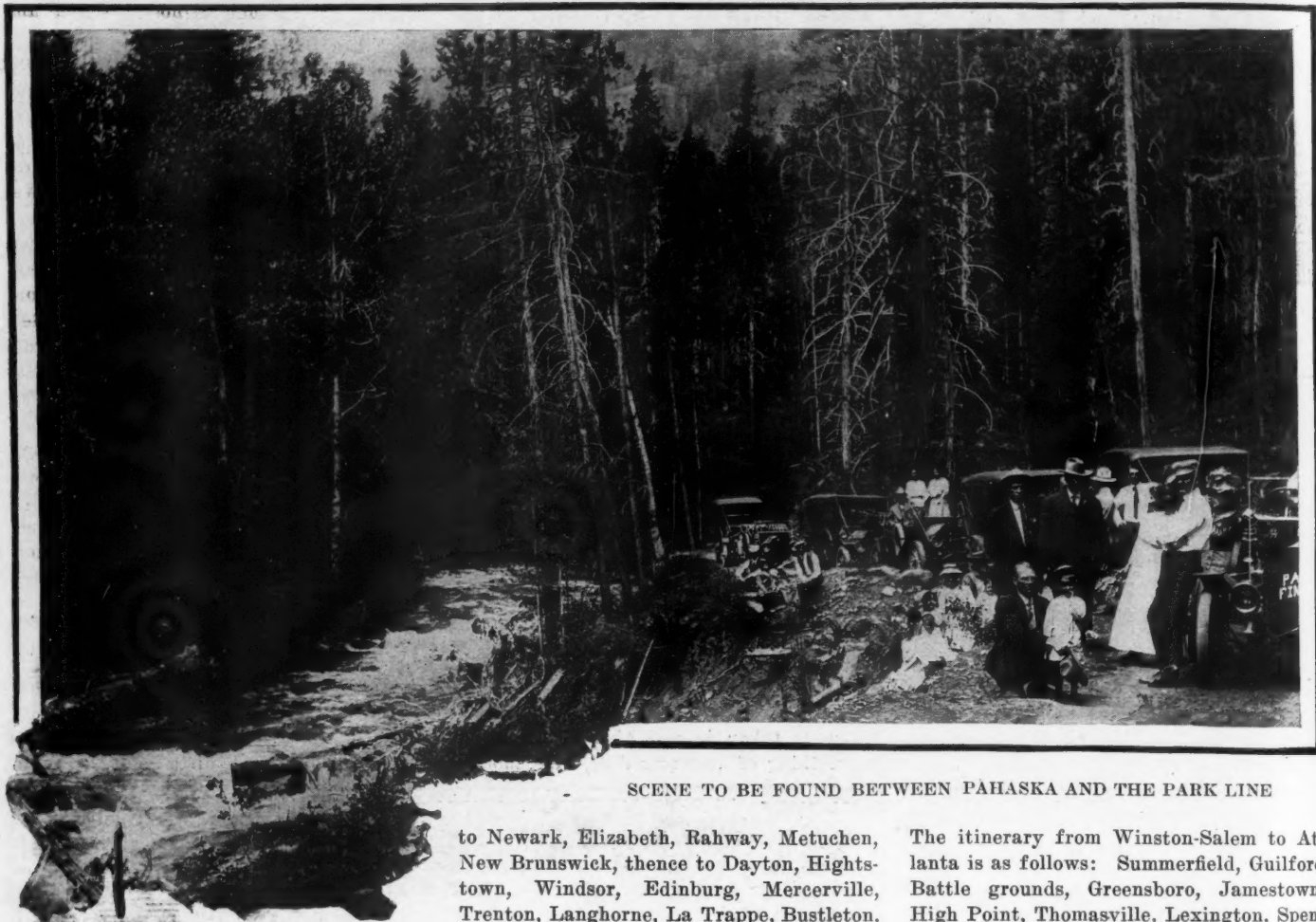
GOING TO MASON CITY, VA.

St. Peter, Minn.—Editor Motor Age—Please give me the best and shortest route from St. Peter, Minn., to Mason City, Ia.—W. H. Rinkel.

Over fairly good dirt roads, a route



A GOOD FISHING SPOT EN ROUTE—OUTLINE TO EASTERN ENTRANCE OF YELLOWSTONE



SCENE TO BE FOUND BETWEEN PAHASKA AND THE PARK LINE

published in the Blue Book, volume 5, passes through Mankato, Janesville, Waseca, Meriden, Owatonna, Geneva, Albert Lea, Glenville, Northwood, Kensett, Manly and Mason City, a distance of 123 miles.

PLANS FLORIDA TRIP

Lanark, Ill.—Editor Motor Age—Please outline the best route from Lanark to Sanford, Fla., giving the distance and about the time it would take to make the tour. Would I have to secure a license in any other states? Are the mountains considered in any way dangerous? What month would be the best to make the trip? I should like to route by way of Chicago, Buffalo, Albany, New York, Washington and Jacksonville.—M. S. Nelson.

Motor to Milledgeville and Sterling, probably 25 miles, then on the regular road to Chicago, through Dixon, Franklin Grove, Ashton, Rochelle, Creston, DeKalb, Geneva, West Chicago, Lombard, Elmhurst, Maywood, Garfield Park, to Chicago, 104 miles, which is your first night's stop. For the route to Buffalo, Albany and New York, you are referred to a communication from Kansas City, Mo.

There are so many exits from New York, and not knowing the exact localities you prefer to cover, Motor Age outlines here-with the shortest and most direct route to Philadelphia, and for the many alternate routes refers you to volume 2 of the Blue Book. Leaving New York by the Weehawken ferry, west Forty-second street, go

to Newark, Elizabeth, Rahway, Metuchen, New Brunswick, thence to Dayton, Hightstown, Windsor, Edinburg, Mercerville, Trenton, Langhorne, La Trappe, Bustleton, Ogontz, Philadelphia. To Baltimore you pass through Darby, Village Green, Chelsea, Concord, Wilmington, Marshalltown, Newark, Appleton, Fair Hill, Blueball, Calvert, Rising Sun, Battle Swamp, Perryville, Havre de Grace, Churchville, Belair, Glen Arm, Towson, Woodbrook, Baltimore; Baltimore to Washington, D. C., is 44 miles through Catonsville, Relay, Laurel, Beltsville, Hyattsville, and Blagdensburg. To Winchester and Roanoke you route through Ballston, Falls Church, Leesburg, Hamilton, Purcellville, Berryville, Winchester, Stephen City, Middletown, Strassburg, Maurertown, Woodstock, Edinburg, Mount Jackson, New Market, Lacy Springs, Harrisonburg, Mount Crawford, Burkstown, Verona, Staunton, Minto Springs, Greenville, Midway, Fairfield, Lexington, Fancy Hill, Natural Bridge, Buchanan, Troutville, Cloverdale, Roanoke.

The road between Roanoke and Martinsville is a rough, mountainous one. In fact, continuous stretches of first-class roads in the south are very scarce. Anyone contemplating a trip over southern roads should be well provided with block and tackle, and it would be well to have a car with a 60-inch tread.

From Roanoke to Winston-Salem you pass through Rocky Mount, Snyderoville, Oak Level, Martinsville, Ridgeway, Stoneville, Madison, Ellisboro, Stokesboro, Kernersville and Centerville. You will have to ford many small streams, the first part being very hilly, with deep grades.

The itinerary from Winston-Salem to Atlanta is as follows: Summerfield, Guilford Battle grounds, Greensboro, Jamestown, High Point, Thomasville, Lexington, Spencer, Salisbury, China Grove, Kanapolis, Concord, Newell, Charlotte, Sloane's Ferry, Belmont, Lowell, Gastonia, Bessemer City, King's Mountain, Grover, N. C., Blacksburg, S. C., Gafney, Converse, Spartanburg, Duncan, Greer, Greenville, Oak Grove, Piedmont, Anderson, Lavonia, Canon, Royston, Franklin, Commerce, Winder, Auburn, Lawrenceville, Snellville, Stone Mountain, Scottdale, Ingelside and Decatur; Atlanta to Macon—Jonesboro, Lovejoy, Hampton, Pomona, Griffin, Milner, Barnesville, Forsyth, Smarrs, Bolingbroke, Loraine; Macon to Jacksonville—Hawkinsville, Abbeville, Waycross.

Should you desire to motor to Savannah and thence along the coast to Jacksonville from Macon, go through Milledgeville, Sandersville, Davisboro, Louisville, Waynesboro, Perkin, Millen, Scarboro, Rockyford, Statesboro, Stilson, Savannah, Riceboro, Eulonia, Darien, Brunswick, Old Sterling, Tarboro, Owens Ferry, Kings Ferry and Callahan. At Darien you can secure a Darien-Dents landing ferry for \$5; at Owens Ferry and Kings Ferry the charges are \$1.

The coast route will take you on to Daytona, Fla. through St. Augustine, Moultrie, Ormond, Sea Breeze and Daytona, thence inland to DeLand, Orange City, Enterprise, Osteen, crossing new bridge to Sanford.

The total distance is in the neighborhood of 2,666 miles and the approximate time would be 16 days. It can be made in

less, and it can be stretched out to 3 weeks which would make it possible for you to take a few little side trips. Many of these are outlined in the Blue Book volumes.

In Maryland a permit will have to be secured. Two 7-day permits can be had each year for which no charge is made; in Virginia you are allowed two periods of 7 days each; and in Florida 30 days are allowed. Florida is the best in winter, so if you intend staying there for any length of time, it is best to leave in the late fall.

ST. LOUIS TO MICHIGAN

St. Louis, Mo.—Editor Motor Age—I would like the best route from St. Louis to Fair Haven, Mich.—W. Esselbrueger.

One of the many routes outlined in the Blue Book, volume 4, would be to Champaign through Collinsville, Marysville, Edwardsville, Carpenter, Worden, Staunton, Mt. Olive, Litchfield, Morrisonville, Vanderville, Taylorville, Blue Mound, Macon, Elwin, Decatur, Maroa, Monticello, Savoy, and Champaign. It is 93 miles to Lafayette through Urbana, Danville, Covington, Stone Bluff, Rob Roy, Attica, Shadeland, and Elston. Good gravel prevails to Fort Wayne, 134 miles, through Americus, Delphi, Camden, Deer Creek, Logansport, Peru, Wabash, Huntington; and to Detroit, 173 miles, through Maysville, Hicksville, Brunersburg, Defiance, Okalona, Napoleon, Wauseon, Ottoket, Winomeg, Lyons, Jasper, Madison, Adrian, Tecumseh, Clinton, Saline, Ypsilanti, Wayne, Dearborn and Detroit.

A beautiful drive takes you to Grosse Point, Clairview, Veiniers, Labadies Defers, Lakeside Inn and Mt. Clemens, thence on to New Baltimore, Anchorville, and Fair Haven. Another road lies through Brinkham, Girard, Halfway, Roseville, and Utica to Mt. Clemens.

RED BUD TO CHICAGO

Red Bud, Ill.—Editor Motor Age—Kindly outline the best route from Red Bud to Chicago, together with the mileage and road conditions.—A. Boedeker.

Head for Freeburg, Belleville and St. Louis, about 35 miles. Springfield is 109 miles over roads that usually are good during summer months and through Collinsville, Marysville, Edwardsville, Carpenter, Worden, Staunton, Mt. Olive, Litchfield, Springfield. The next stretch to Bloomington, 77 miles, is Williamsville, Elkhart, Lincoln, McLean, and Shirley. It is 149 miles to Chicago through Normal, Towanda, Lexington, Chenoa, Pontiac, Odell, Dwight, Morris, Minooka, Joliet, LaGrange, Forest Park, and Chicago. After Morris is reached the road is mostly gravel and macadam. The Blue Book gives running directions from St. Louis on in volume 4.

DESIRES A LONG ROUTE

Kansas City, Mo.—Editor Motor Age—I would like to have information covering a motor car trip as follows: Starting at

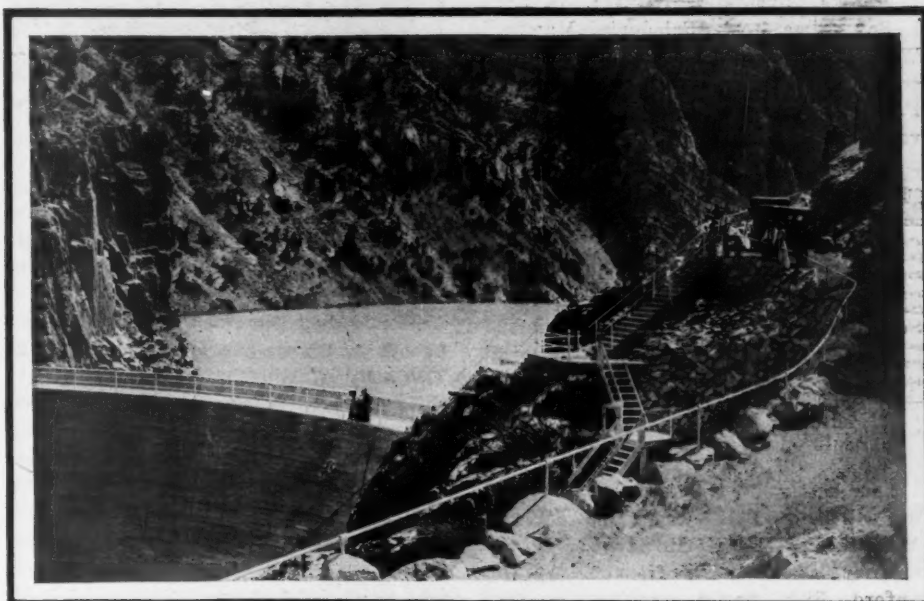
Kansas City thence to St. Louis, St. Louis to Chicago, from Chicago either to Detroit or Cleveland, then to Buffalo, Rochester, Albany, New York city and Boston.—C. N. Shelden.

Leaving Kansas City the more important way-points in Missouri will be Independence, Blue Springs, Oak Grove, Higginsville, Blackburn, Marshall, Slater, Glasgow, Higbee, Clarke, Mexico, Martinsburg, Wellsville, New Florence, Warrenton, Wentzville, St. Charles and St. Louis.

From St. Louis proceed through East St. Louis, Collinsville, Edwardsville, Staunton, Litchfield to Springfield. On this stretch you will have dirt roads, and not always good; from Springfield to Bloomington, dirt road good in dry weather. On this section the main towns will be Williamsville and Lincoln. Good dirt roads to be found in dry weather to Lexington, Chenoa, Pontiac, Odell, to Morris, with remainder mostly gravel and macadam,

taking you through Minooka, Joliet and LaGrange to Chicago.

To continue, going by way of Detroit, you should pass through South Chicago, Whiting, Grasselli, Gibson, Hassville, Highlands, thence east to Hobart, or, instead of turning east at Highlands, you might proceed directly south through that town, passing through Schererville, thence east via Merrillville, to Valparaiso, at which point the routes merge, and continue via LaPorte, and South Bend in Indiana; running through southern Michigan to Niles, Dowagiac, Decatur, Paw Paw, Kalamazoo, Battle Creek, Albion, Jackson, Chelsea, Ann Arbor, Ypsilanti, and Wayne to Detroit. If you wish to go through Canada, cross to Windsor, Ont., proceeding through Essex, Ruthven, Leamington, Dealtown, Blenheim, Ridgetown, Clachan, Wardsville, Strathburn, Delaware, Lambeth, London, Thamesford, Ingersoll, Woodstock, Brantford, Alberton, Ancaster, Hamilton, Stoney



VIEW IN THE SHOSHONE CANON, SHOWING THE DAM



BELOW WAPITI, 25 MILES OUT OF CODY

Creek, Winona, Grimsby, Beamsville, Jordan, St. Catharines, Homer, St. Davids, Niagara Falls, and Towanda to Buffalo.

But if you decide to skirt the southern shore of Lake Erie, touching at Cleveland, from South Bend proceed to Mishawaka, Osceola, Elkhart, Goshen, Millersburg, Ligonier, Wanaka, Brimfield, Kendalville, Waterloo, Butler, Edgerton, Bryan, Stryker, Archbald, Wausean, Delta, Swanton, Java, Toledo, Stony Ridge, Lemoyne, Woodville, Fremont, Clyde, Bellevue, Monroeville, Norwalk, Berlinville, Birmingham, Henrietta, Amherst, Elyria, Ridgeville, Bement, Dover, Rocky River, to Cleveland; continuing thence through Euclid, Willoughby, Mentor, Painesville, Madison, Unionville, Geneva, Saybrook, Ashtabula, Amboy, Conneaut, East Springfield, Girard, Fairview, Erie, Northeast, Westfield, Fredonia, Irving, Evans, to Buffalo. Leaving Buffalo for Rochester the road leads through Williamsville, Clarence, Pembroke, Bushville, Batavia, Stafford, LeRoy, Lime Rock, Caledonia, Mumford, Wheatland Center, Scottsville, to Rochester; then through Fairport, Macedon, Palmyra, Lyons, Lock Berlin, Clyde, Savannah, Spring Lake, Port Byron, Weedsport, Elbridge, Wellington, Camillus, Syracuse, Fayetteville, Oran, Cazenovia, Nelson, Morrisville, Bouckville, Madison, Sangerfield, Bridgewater, Winfield, Richfield Springs, Warren, Springfield, Sharon Springs, Carlisle, Sloansville, Esperance, Schenectady to Albany. Crossing the Hudson river at Albany, journey south via Rensselaer, Stuyvesant, Hudson, Red Hook, Hyde Park, Poughkeepsie, Fishkill, Peekskill, Tarrytown, Yonkers into New York city.

Your best route from New York to Boston will be via Mt. Vernon, White Plains, Armonk, Bedford, North Salem, Danbury, Stepney, Shelton, New Haven, Wallingford, Meriden, Berlin, Hartford, Windsor, Windsor Locks, Springfield, Palmer, Warren, Brookfield, Leicester, Worcester, Northboro, Framingham Center, Wellesley Hills, and Brookline.

Another route from New York to Boston lies along the north shore of Long Island sound, touching at Stamford, Norwalk, New Haven, New London, Narragansett Pier, Hamilton and East Greenwich to Providence, but long stretches of very poor macadam will be found until you reach Providence, from which point all the way to Boston there is good macadam via Pawtucket, North Attleboro, Wrentham, Walpole, Norwood.

As suggestions in apportioning your daily runs, the following places may serve as night stops, although possibly you will find it advisable to stop one side or the other of the points named. This will, of course, depend upon the speed at which you wish to travel, conditions of the road, the time to be consumed in the trip, etc.: Mexico, Mo.; St. Louis, Mo.; Bloomington, Ill.; Chicago, Ill.; Kalamazoo, Mich.; Detroit, Mich.; London, Ont., Canada; Buf-



AMONG THE PINES AT PAHASKA

falo, N. Y.; or if via Cleveland, Bryan, O.; Cleveland, O.; Buffalo, N. Y.; Syracuse, N. Y.; Albany, N. Y.; Springfield, Mass.; Boston, Mass.; or via Long Island sound from New York, Narragansett Pier, R. I.; Moston, Mass. More detailed directions can be obtained from Automobile Blue Books.

TWO-DAY TOUR TO PENNSYLVANIA

Racine, Wis.—Editor Motor Age—Kindly give me the best route from Erie, Pa., to Pittsburgh. I use the central division of the Blue Book, but it does not cover that territory.—W. F. McCaughey.

A pleasant two-day tour would bring you in Clarion for the first night, a distance of 102 miles through Waterford, Cambridge

Springs, Venango, Seagertown, Meadville, Shaws, Cochranton, Franklin, Oil City, Salem, Salina, East Sandy, Shippensburg and Clarion. Eighty-seven miles more will see you in Pittsburgh by routing through Reedsburg, Curllsville, Rimersburg, East Brady, Kaylor, Chicora, Butler, Harmaston, Sasonburg, Comnersville, Undercliff, Sharpsburg and Pittsburgh.

There is a shorter road by 55 miles and the trip can be made in a day, providing the roads are perfectly dry. There are numerous hills and sharp turns as well as considerable clay, consequently not conducive to a pleasant journey under any adverse conditions. See Blue Book No. 3.

Motor Touring Conditions in the Eastern States

WITH the sudden advent of summer the touring season in New England has opened with a vim and the Touring Club of America is daily in receipt of new and authentic route information. Recent trips have been surveyed by members in all directions radiating out of Boston, and the popular tour to Albany via Worcester, Springfield and Pittsfield can now be made over good roads, with the exception of a short stretch at the village of Nassau, N. Y. The road from Lenox to Pittsfield is good earth—Brainard to Malden Bridge poor earth. With these exceptions the route is excellent.

On the route from Haverhill, Mass., to Andover, there is road extension reconstruction each side of Ward's hill. Motorists should go through Lawrence and avoid this. If going from Andover to Amesbury, Portsmouth, etc., a good shorter route is by Johnson's pond in Andover; then via Rock's Bridge, etc.

The roads from Lynn to Hanover, Mass., by way of Forest Hills, Milton and Quincy are in fair condition, with the exception of a detour on Morton street, after crossing Blue Hill avenue, and a bad stretch of crushed stone just before reaching Quincy. The road from Hanover to Whitman and Brockton is fair, but from Brockton to Randolph is not so good. The distance is 102 miles.

The route from Boston to West Brookfield via Worcester, routes Nos. 247 and 290 in the Automobile Blue Book, is in good condition, except at Marlboro, where at Maple street, beginning at the gas house, extending to the end of the street, is badly torn up, owing to repairs to trolley line. This probably will be in bad condition all summer. Care should be exercised in passing here, as there is room for but one car. Roads in good condition. Returning via Wellesley, there is some worn macadam.

The Mathematics of Motoring

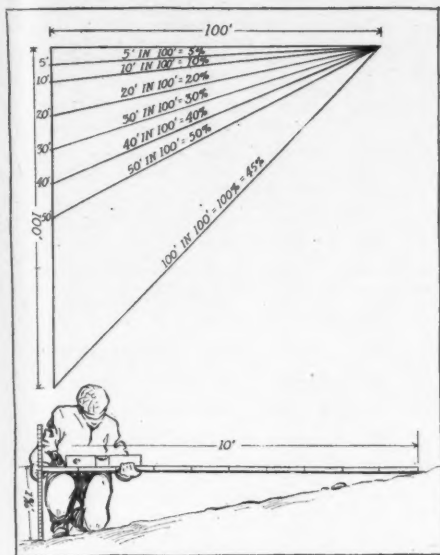


FIG. 1—EASY GRADE MEASUREMENT

PERHAPS there is nothing more subject to the wild guesses of motorists than the grade of hills. Few car owners know the methods by which the different percentages of grade of inclines may be arrived at, and a slope looks very different when viewed from the top or bottom than when viewed from the side. It is not very difficult after a little practice to make a reasonably accurate estimate of the moderate grades usually encountered, and if the motorist is sufficiently interested in knowing the incline of some exceptional hill his car has negotiated, a fairly accurate measurement may be made without much delay.

By the per cent of grade is meant the proportion of the rise to the distance traveled forward horizontally. That is, if in progressing 100 feet on a horizontal line you go up 5 feet, the grade is 5 per cent. If the distance of run is measured along the slope the grade is not quite so great, but in the case of slight grades the difference does not amount to much. This is shown in Fig. 2 where it will be seen that the per cent of grade for a given rise begins to vary appreciably, at about 20 per cent, depending on whether the run is measured horizontally or along the slope. The upper portion of Fig. 1 illustrates the grades of hills with rises in 100 feet.

The simplest method of measuring grades and one which gives results sufficiently accurate for ordinary needs is illustrated in the lower part of Fig. 1. Procure a straight stick and mark it 10 feet from one end, a 2-foot rule and a carpenter's level. At a point on the hill where the roadbed seems to have the same grade as the hill as a whole place one end of the stick on the ground and hold the stick horizontal. The carpenter's level is merely used to determine

Measurement of Grades

when the stick is exactly horizontal. Then measure the distance from the 10-foot mark on the stick to the ground. Multiply this distance in feet by 10; this is the percent of grade. For instance, in the illustration, the end of the stick is 1 foot 9 inches from the ground, or 1.75 feet, consequently the grade is 17.5 per cent. An interesting fact about grades is that at about 57 per cent the wheels of a motor car on ordinary roads fail to propel the machine up the slope because at this angle the force of gravity overcomes the traction of the wheels on the road.

A method of specifying the steepness of a hill which is commonly used in Great Britain is much like the American percentage basis. That method is by referring to the horizontal distance as compared to 1 foot of rise. In the American method the horizontal distance is always assumed to be 100 feet while in the British system it is the rise that is constant while the horizontal distance varies. For instance, a grade that rises 1 foot in a horizontal distance of 10 feet is called a grade of 1 in 10 which is the equivalent of a 2½ per cent grade. A grade of 1 in 1 is, of course, 100 per cent, or 45 degrees. The table below shows a comparison between the per cent of grade, that is the American method, the gradient of 1 various distances, the British method, and the corresponding rise in feet per mile.

The rise of a hill is sometimes expressed in degrees, and in this case the element of distance does not come into the calculation, for the standard is the division of the circle into 360 degrees. If the bottom of the hill be considered as the center of the circle, of which the top is a point on the circumference, the degree of rise will be the number of degrees from the point where the line of

slope of the hill intercepts the circle to the point where a horizontal line would intersect it, that is, so many degrees from the horizontal.

Grade per cent	Gradient—1 in	Rise feet per mile
.10	1,000	5.28
.15	667	7.92
.20	500	10.56
.25	400	13.20
.30	333	15.84
.40	250	21.12
.50	200	26.40
.60	167	31.68
.80	125	42.24
1.00	100	52.80
1.20	83	63.36
1.25	80	66.00
1.50	67	79.20
1.60	62	84.48
2.00	50	105.60
2.50	40	132.00
3.00	33	158.40
4.00	25	211.40
5.00	20	264.00
6.00	16.6	317.00
7.00	14.3	367.00
8.00	12.5	422.00
9.00	11.1	475.00
10.00	10.0	528.00
11.00	9.1	583.00
12.00	8.3	636.00
13.00	7.7	688.00
14.00	7.1	742.00
15.00	6.7	792.00

A method of quickly finding the grade of a hill that is often recommended to motorists is to stop the car on the hill, tie a plumb line, which may be a string with a stone on the end of it, to the top iron on the front seat, or to the door handle where it can swing clear. When it is still, make a mark on the running board where the string touches it. When the car is again on the level, attach the plumb line again and let it hang as before. This time it will hang vertically and the distance between the points touched by the plumb line on the hill and on the level measured on the running board and divided into the length of the string from the point of attachment to the running board will give per cent grade.

There is one objection to this method which may have weight with some motorists, and that is, on a grade that is sufficiently steep to be of interest it is not always good policy to stop the car.

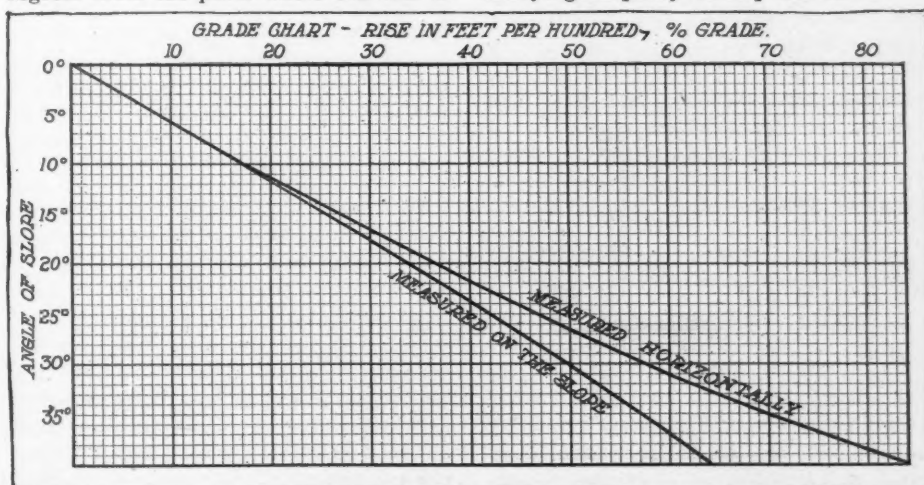


FIG. 2—SHOWING VARIATION IN GRADE AS MEASURED ON HORIZONTAL AND SLOPE



Current Motor Car Patents

PATENTS ISSUED JUNE 4, 1912.

1,028,115—Water Cooling System for Hydrocarbon Engines. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed May 20, 1907. Serial No. 374,664.

1,028,153—Automatic Headlight. George T. Tribe and John M. Bemis, Worcester, Mass. Filed October 28, 1909. Serial No. 525,176. Renewed October 26, 1911. Serial No. 656,996.

1,028,172—Resilient wheel. James R. Wright, Trenton, Mo. Filed March 2, 1912. Serial No. 681,065.

1,028,174—Acetylene Gas Generator. Fay H. Young, Rockford, Ill. Filed March 24, 1911. Serial No. 616,751.

1,028,185—Shock Absorber. Charles O. Browne, Norwood, Ohio. Filed November 16, 1911. Serial No. 660,568.

1,028,192—Wrench. Schuyler C. Cruzan, Whittier, Cal. Filed August 24, 1911. Serial No. 645,886.

1,028,200—Spark Plug. Charles C. Eldridge and Edwin J. Beebe, Marshalltown, Iowa. Filed March 20, 1911. Serial No. 615,689.

1,028,210—Spring Wheel. Ira Neely Harton, Lisbon, N. D. Filed January 13, 1912. Serial No. 670,972.

1,028,220—Speedometer. Joseph W. Jones, New York, N. Y. Filed August 7, 1908. Serial No. 447,447.

1,028,243—Wrench. Charles T. Melhorn, Amsbury, Pa. Filed March 18, 1912. Serial No. 684,543.

1,028,266—Guy for Vehicle Tops. Helen M. Ormsby, Xenia, Ohio. Filed January 21, 1910. Serial No. 539,362.

1,028,271—Lamp Cover. William T. Phillips, Berkeley, Cal. Filed July 22, 1910. Serial No. 573,236.

1,028,316—Rotary Engine. Newell O. Allyn, Warren, Ohio, assignor of one-half to George W. Upton, Warren, Ohio. Filed March 6,

1905. Serial No. 248,619. Renewed May 28, 1909. Serial No. 498,963.

1,028,331—Vehicle Tire. William J. Cunningham, Philadelphia, Pa. Filed May 23, 1911. Serial No. 628,959.

1,028,334—Puncture Proof Tire. McRoy De Viese, Fresno, Cal. Filed October 7, 1911. Serial No. 653,392.

1,028,347—Variable Speed Planetary Gearing. Emil Gnoeth, Madisonville, Ohio. Filed July 3, 1911. Serial No. 636,586.

1,028,359—Means for Cooling Gas Engines. Chester Charles Jones, Beatrice, Nebraska. Filed March 6, 1909. Serial No. 481,274.

1,028,389—Method of Treating Steel. Auguste J. Rossi, Niagara Falls, N. Y., assignor to the Titanium Alloy Mfg. Co., New York, N. Y., a corporation of Maine. Filed January 6, 1911. Serial No. 601,161.

1,028,478—Molder's Flask. Charles Morgan, Freeport, Ill., assignor to Arcade Mfg. Co., Freeport, Ill., a corporation of Illinois. Filed November 8, 1911. Serial No. 659,135.

1,028,488—Magnetic Speed Indicator. Leon Le Pontois, New Rochelle, N. Y., assignor to A. R. Mosler & Co., New York, N. Y., a corporation of New York. Filed June 15, 1907. Serial No. 379,131.

1,028,490—Grip Tread and Mud Shoe for Motor Cars. Cortez V. Pugh, St. Louis, Mo., assignor of four-eighths to Edward Brockschmitt, four-eighths to Arville A. VanCleave and four-eighths to John Schulz, St. Louis, Mo. Filed March 22, 1911. Serial No. 616,111.

1,028,522—Variable Speed Transmission Device. Frederick T. Adams, Victoria, British Columbia, Canada. Filed August 14, 1911. Serial No. 643,896.

1,028,553—Motor Car Heater. Frank W. Dilks, Philadelphia, Pa., and David Reyam and Eugene E. du Pont, Washington, Del.; said Dilks assignor to said Reyam and said du Pont. Filed July 12, 1911. Serial No. 638,145.

1,028,558—Apparatus for Generating and Storing Acetylene. Gerard Lester Eastman and Albertson Hicks, Roslyn, N. Y. Filed February 18, 1911. Serial No. 609,398.

1,028,571—Spring Door. William H. Jordan, Knightstown, Indiana. Filed August 26, 1910. Serial No. 578,962.

1,028,624—Motor Car Starter. Wilbert B. Speice, Payne, Ohio. Filed September 13, 1911. Serial No. 649,040.

1,028,628—Tire Inflating Apparatus. Mason F. Stolberg, Toledo, Ohio. Filed August 24, 1911. Serial No. 645,892.

1,028,656—Pneumatic Hub. Norman E. Andrie, Centerville, Md. Filed October 31, 1911. Serial No. 657,758.

1,028,713—Carburetor for Internal Combustion Motors. Wassily Grinewezki, Moscow, Russia. Original application filed January 28, 1907. Serial No. 354,575. Divided and this application filed July 6, 1910. Serial No. 570,539.

1,028,721—Illuminator. Thomas Clarence Helsey and Andrew J. Sanford, Newark, Ohio, assignors to A. H. Helsey & Co., Inc., Newark, Ohio, a corporation of West Virginia. Filed August 16, 1910. Serial No. 577,416.

1,028,740—Cushioning Device for Vehicles. Theodore A. Klenke, New York, N. Y., assignor to Klenke Cushion Axle Co., a corporation of New York. Filed November 27, 1906. Serial No. 345,389.

1,028,819—Motor Car Sleigh Attachment. Bowditch Place Frazee, Bath, Maine. Filed July 15, 1911. Serial No. 638,654.

1,028,847—Exhaust Muffler. Augustus G. Snyder, Utica, N. Y. Filed October 16, 1911. Serial No. 654,925.

DESIGN.

42,581—Manifold for Internal Combustion Engines. Russell Huff, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed November 27, 1911. Serial No. 662,774.

ANOTHER Selden Patent Allowed—

No. 1,028,501, dated June 4; to George B. Selden, Rochester, N. Y.—The original application for this patent was filed May 8, 1879, as a part of the famous Selden patent. This application was divided from the rest and filed September 7, 1895. The claims allowed cover the combination with the body of a self-propelled vehicle, of a driving and steering truck for it which comprises an axle, driving wheels, steering wheels and part of the steering mechanism, and a motor with its controlling devices on this truck. One claim contemplates carrying the motor controlling devices vertically upward from the driving axle on its turning axis so that the controls will be operative in any position of the truck with respect to the body. One claim specifies particularly a fore truck as the steering and driving truck, while another contemplates such connections that will per-

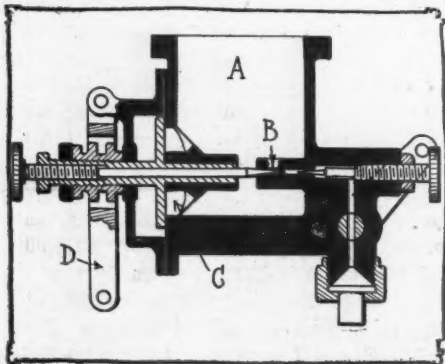


FIG. 1—HEZINGER FLOATLESS CARBURETER WITH CONTROLLABLE AIR VALVE

mit turning the driving truck completely around on its axis, possibly for reversing. The fifth claim mentions the use of flexible motor controlling devices with manually operated devices for actuating them from above the body of the vehicle.

Safety Starting Crank—No. 1,028,686, dated June 4; to Marie DeMount Gorizia, Austria, Hungary.—In this starting crank, Fig. 4, the starting crank attaches to a sleeve S on which is an integral disk D. The inner end of the sleeve has a clutch mechanism K to engage with a corresponding mechanism K1 on the crankshaft. On the front of the motor is a stationary disk D1, and between this disk and the starting handle disk D is a series of connecting levers L, so arranged as to pull the disk D and hold the clutches at K in gear, so long as the shaft of the motor is rotated in the forward direction by the starting handle, and to push the disk D outwards and disengage the clutches at K, should the crank be rotated in a backward direction by the motor.

Self-Aligning Bearing—No. 1,028,844, dated June 4; to Sven Gustas Wingquist, Gottenburg, Sweden.—The inner race A and the outer race B, Fig. 2, are each formed integrally from a single piece of metal. The inner one has two or more circumferential grooves with a shoulder between them, each groove being designed to take a race of balls. The outer member D has a spherical concave inner surface against which the balls bear. The center of the concave surface is a point located

at the rotative axis of the inner portion A, and midway between the axes of the two circles of balls. This affords concentric tracks and permits of rocking of the inner ring A, while the outer ring remains stationary.

Lewis Lamp Hood—No. 1,028,231, dated June 4; to Harry A. Lewis, Chicago, Ill.—A semi-dome-shaped visor projects from the upper part of the rim portion of the lamp to intercept the upwardly radiating rays of light, for the purpose of preventing dazzling the eyes of drivers traveling in the opposite direction. The lower edge of the visor is in a horizontal plane in which the burner is situated. The visor fastens to the lamp by straps and clamps.

A Floatless Carburetor—No. 1,028,723, dated June 4; to Hugo Hezinger, Baldwin, and Carl Hezinger, New York.—This carburetor has a cylindrical mixing chamber A at the base of which the gasoline supply

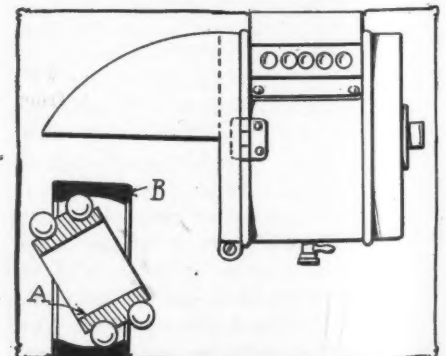


FIG. 2—WINGQUIST SELF-ALIGNING BEARING AND LEWIS LAMP HOOD

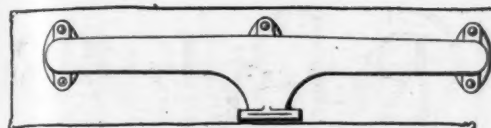


FIG. 3—PACKARD MANIFOLD DESIGN

enters by an opening B and opposite to this is an opening C through which the air enters. The air opening is manually controlled by a lever D, and this lever also carries a closure valve of lead-pencil shape, the tip of which enters the gasoline orifice B, so that by closing the air valve the flow of gasoline is shut off and by opening the air valve gasoline is permitted to enter just in proportion as the air valve is opened.

Anti-Freezing Device—No. 1,028,808, dated June 4; to Howard S. Campbell, Baltimore, Md.—This patent relates to a valve located in a drain pipe in the radiator, the valve being under the control of an electric motor, the electric motor in turn being controlled by a temperature actuated element, so that when the temperature falls to a point where there would be danger of freezing, the armature on the valve stem is sufficiently turned or rotated to open the valve and allow the water to drain out of the system. The valve with its actuating mechanism is located in the lower and coldest part of the radiator.

Dain Friction Transmission—No. 1,028,442, dated June 4; to Joseph Dain, Ottumwa, Ia.—This friction set claims right to two coacting disks mounted at an angle to each other and mounted with shafts transversely of the chassis. Between these disks is a driven wheel on the propeller shaft to the rear axle. The means of transmitting power from the motor to the coacting disks consists of a disk on the rear end of the motor shaft, this disk contacting with the peripheries of the other disks, which are moveable in and out to permit of speed changing.

Dual Demountable Rims—No. 1,028,109, dated June 4; to James Ellis Hale, Akron, O.—Two rims R and R1, Fig. 6, are located side by side to take solid rubber or other tires. Each rim is held in place by split expansion rings A, which are expanded by members E. The outer lateral faces of the expansion rings are inclined so as to lock into the oppositely inclined base faces on the inside of the demountable rims R and R1. The members E are so mounted as to force the expansion rings A away from each other when tightened, and the rims R and R1 are also forced away from each other when the mechanism E is set up.

Fluid Shock Absorber—No. 1,028,400, dated June 4; to Horace B. Stanton, Boston, Mass.—This shock absorber consists of an outer vertical cylinder which attaches to the car axle and a triple piston within the cylinder, the piston rod attaching to the car frame. The triple piston consists of one main piston with two

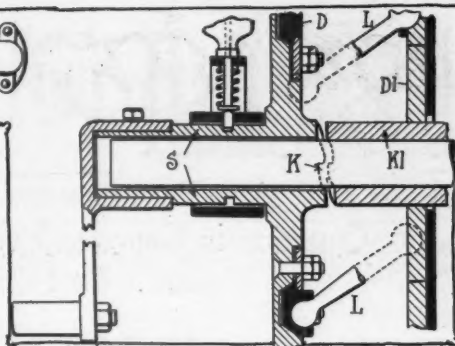


FIG. 4—SAFETY CRANK INVENTED BY WOMAN

auxiliary pistons, one above and the other below it. In the main piston are holes for the free passage of the fluid; in each auxiliary piston are smaller sized holes. The auxiliary piston below the main piston can, through the medium of a series of bolts and springs, move away from the main piston or closer to it; and the upper auxiliary piston can, through a spring, surround the piston rod and move towards the main piston. The use of the auxiliary pistons is to restrict the movement of the main piston.

CONDITIONS IN VANCOUVER

Vancouver, B. C., June 7—Substantiating the optimistic predictions of the dealers of Vancouver that the season of 1912 would establish a new record, the volume of business transacted so far this month has shattered the marks of all previous months, and this remarkable showing has been made at a period of the year when the buying movement is supposed to hardly be under way. Whether the heavy sales so early in the season indicate an unprecedented movement in cars when the summer weather sets in, or whether the present volume is an average amount of business, remains to be seen, but the dealers are most sanguine over the prospects for a heavier trade.

Since the first dealer planted himself

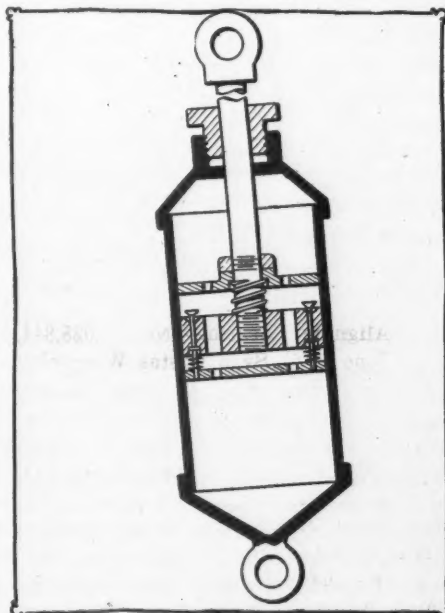


FIG. 5—STANTON FLUID SHOCK ABSORBER

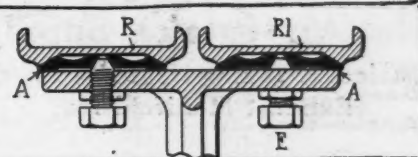


FIG. 6—HALE DUAL DEMOUNTABLE RIM

here no season has opened so auspiciously as 1912. The buying began much earlier than before and the volume has kept a steady level with frequent big gains. The buying movement has been felt by dealers in all makes of cars from the luxurious \$6,000 limousines and touring cars down to the runabout, indicating a general wave of prosperity.

It is doubtful if there is a single dealer in Vancouver who has not already equaled the total business for last year, although the 1912 buying period has hardly opened. Unusually good weather probably accounts for the fact that prospective purchasers invaded the showrooms exceptionally early this year, but to emphasize their assertions that the movement indicates a big year, the dealers point to their sales records, which show that they have been disposing of cars during the rainy days as well as the clear days.

Some dealers apparently foresaw the present rush and placed a big stock of cars in storage during the winter months, when shipments were easy to obtain from the factory. They are now reaping the benefit of their actions, but should the present rush continue through the summer, they are apt to find themselves short of cars to supply the demand. Experience has taught the dealers—and they learned a good lesson last year when a sudden rush came upon them and then the factories could not adequately supply the demand—that prospective buyers do not like to wait several weeks for their machines to be shipped across the country, and the majority of them made preparations during the cold months to forestall a repetition of the shortage dilemma.

FRENCH EXPORTS

Paris, France, June 7—Motor car export trade in France for January, February and March, 1912, shows an increase of nearly \$364,400 over that for the corresponding period of the previous year, 1912 trade amounting to \$10,043,200 and 1911 \$9,678,800. Import trade in motor cars decreased \$154,200 the first quarter in 1912. Export increase can be accounted for in the purchases of the various countries—Germany to the value of \$668,000, Belgium \$2,136,000, Spain \$243,400, Switzerland, \$317,800 and Austro-Hungary \$68,800. There was a slump in both export and import trade in England, the former decrease amounting to \$415,000 and the latter \$83,000. Germany's sales fell from \$151,400 in 1911 to \$69,800 and Belgium's from \$118,000 to \$97,500. The United States found an improved market, rising from \$113,200 in 1911 to \$138,600 in 1912.

Hot-Air Intake Supply Device for Taking Heated Air from Exhaust Manifold for Carburetor

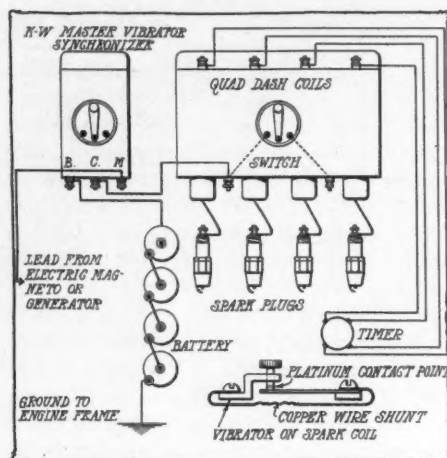


FIG. 1—CONNECTIONS OF MASTER VIBRATOR

CABERY, ILL.—Editor Motor Age—Will a single-cylinder stationary gas engine run idle if its compression, ignition, carburation, etc., are not correct?

2—Why do some carbonless motor oils lose their viscosity?

3—Explain the term "saybolt seconds."

4—Show me how I can use the exhaust gas to heat the intake pipe on a 1911 Moon 30.

5—The steering wheel on my Moon 30 squeaks when turned to the right. I am unable to stop it by oiling. Could you suggest a way to stop this?—Charles E. Christ.

1—If the troubles in any or all of these functions are not sufficient to cut the power down below that required to turn the engine over, it will run idle.

2—Because the heat in the engine cylinder is greater than that for which the oil is intended.

3—The term refers to the viscosity of fluids, usually lubricants, as measured by an instrument devised by Saybolt. A lubricant showing so many drops per second in this instrument is said to have a viscosity of so many saybolt seconds.

4—Take down the steering gear and repack with grease.

5—Put a sheet metal sleeve about 4 inches long around the exhaust pipe and run a flexible metallic hose about 2 inches in diameter from the center of the sleeve to the hot-air intake of the carburetor. A special fitting for the purpose, called the Col-Mac exhaust hood, is marketed by the Breeze Carburetor Co. This device will be described and illustrated in the Development Brief columns of an early number of Motor Age.

THROW IT OUT

Steubenville, O.—Editor Motor Age—Why will not my Arctic cup grease get hard again after I have melted it for the purpose of putting it in a cleaner recep-

The Readers'

Average Weight Per Horsepower of Cars—Power and Pounds
Question in Concrete Form—Heating Cup Grease
Ruins It for Lubricating Purposes

tacle? It was quite a little harder than common vaseline or petrolatum before I melted it, but now it is as thin as Polarine engine oil, and refuses to get hard as well-behaved cup grease should.—V. B.

Arctic cup grease is one of the class of lubricants known as non-melting greases. Such greases have the property of not solidifying after once having been melted. There is no means of bringing it back to its original form and it had better be thrown away.

AVERAGE WEIGHT PER HORSEPOWER

Lansing, Mich.—Editor Motor Age—Do you consider the formula:

$$197 d (d-1) (R+2) N$$

to be accurate for a long stroke motor (5 inches by 6 inches), and if not, have you a better one?

d is the diameter in inches

N is the number of cylinders.

R is the ratio of the bore to the stroke.

2—What is the average, or what should be about the number of pounds per horsepower of a car?—R. H. J.

1—The formula you give was adopted by British engineers and gives more nearly accurate results than most other formulas for motors of the usual sizes, say 5 by 6 inches. With very small motors, this formula will give too small a rating; for instance, if d equals 1, it will be seen that the factor (d-1) equals 0 and the power will be 0 by the formula.

2—This varies quite considerably, for different services. For instance, some localities require a lighter car for the same power than is required in others. Probably the average is near 104 pounds per horsepower for cars between 25 and 45 horsepower.

CLASS DID NOT FILL

Grand Forks, N. D.—Editor Motor Age—Why were air-cooled cars barred in the Quaker City fuel test at Philadelphia? I understand that air-cooled motors are very economical on fuel and do not understand why they should be barred from such a test.—J. W. Lyons.

Air-cooled cars were not barred from the Quaker City fuel test in Philadelphia; but upon finding that there was only one air-cooled car represented in Philadelphia, and believing that it would take more than one make of car to make a test, the Quaker City club abandoned the air-cooled class.

Using the Master Vibrator Method of Connecting Synchronizer in Circuit to Replace Four Trembler Coils

CLINTON, Ia.—Editor Motor Age—I have some 1910 Ford cars which I have taken in on trade. They are equipped with four-unit vibrator coils. Are not master vibrators much better and should master vibrators be used with the old four-unit coils or will separate new coils be required?—J. W. Hall.

The master vibrator coils take the place of the separate vibrators on the four-unit coils and give one fast and powerful vibrator and condenser for all of them, thus assuring absolute synchronism with a smoother running engine and more power. They will operate in connection with either batteries or low-tension magneto current generator or both and with any make of coil; it simply being necessary to short-circuit the vibrator and let the master vibrator, which is contained in a separate box, work for all cylinders. The master vibrator is mounted in a box equipped with switch and can be attached to the dash alongside of the four-unit coils now used on the car or in front of the coil and it may be wired or connected in between the source of current and the coil, as shown in Fig. 1.

In wiring it up you must short-circuit the vibrators on the four-unit coil so as to cut out the use of the condensers and vibrators of the four-unit coil, thus allowing the master vibrator to interrupt the circuit for each unit in turn just as the timer closes the circuit. The master vibrator, it is claimed, gives far more flexibility to an engine, permitting the car to run slower on high gear, and due to the increased synchronism more power from the engine is obtainable at all speeds. Considerable economy in battery current also is claimed for the use of a master vibrator.

PROBABLY SHORTED IN SWITCH

Salina, Colo.—Editor Motor Age—I have been having a very perplexing experience with my dry cells. I will put in a new set which will test 25 to 30 and in about 15 days they will test only 10 to 12. I use the cells for starting only.—J. O. Miller.

You have a short circuit somewhere in your wiring—most probably in the switch.

Clearing House



Kicking Abilities of Motor Not Really Dependant on Way in Which It Turns—Missing on Low Due to Bad Carbureter Adjustment—Wants Electric Lights

Right or Left Cranking Proper Hand to Use in Starting Motor Depends on Direction of Crankshaft Rotation

GRISWOLD, IOWA, Editor Motor Age—A bets that a left-handed cranked engine, similar to the 1910 Oakland, cannot kick similar to the right-handed cranked engine, enough to break a person's arm. A takes the view that an engine cranked to the left will invariably kick away from a man and a right-handed cranked engine will kick toward a man.

2—Is there any difference between an engine which must be cranked to the left and one which must be cranked to the right, in regard to its ability to kick?

The above questions are rather humiliating to the writer, but Motor Age was left as the authority and it was determined I should ask the above questions, although there is no doubt in my mind of the answer.—H. M. Reinig.

The kicking abilities of a motor whose crankshaft turns to the left, as compared to one whose crankshaft turns to the right, all conditions being equal as far as power, etc., is concerned, the two motors would be exactly the same. As for the comparative danger, it all depends upon the method of cranking. For instance, if an operator were to crank a left-hand-cranking motor with the left hand in the same way that he would a right-hand-cranking motor with the right hand, the danger would be equal. If one were to crank the left-hand-cranking motor with the right-hand, however, the danger from a back kick would be less because the pushing down of the left-hand-cranking motor with the right hand against compression is so awkward that it is seldom practiced. With a left-hand-cranking motor, therefore, the operator is more apt to crank his motor simply by pulling up on the crank handle rather than by spinning it. From this point of view, therefore, a left-handed-cranking motor would, perhaps, be a little less dangerous.

IMPROPER CARBURETER ADJUSTMENT

Lexington, Miss.—Editor Motor Age—Please tell me if it is characteristic of all gasoline to leave a white deposit on anything it dries on? The brand I am using does. I have a Mayer carbureter on a 1912 Chalmers 30. By cutting down the

needle valve I can make the motor run smoothly, but do not get the power. If I increase it so as to get more power, the motor will miss when suddenly accelerated, which I have always been told is usually a sign of too much gasoline. And this seems to be the case in this instance, for if I cut down the mixture I can speed up without missing, but get little power. I have to change the needle valve sometimes two or three times a day. Could it be it needs more air?—Hal A. Gilliam.

Increase needle valve opening to give greatest power and then increase high-speed air till motor runs smoothly on high speed.

With pure gasoline this deposit is not left. Usually it is the deposit of dust or other impurities picked up during its exposure to the air. In the bowl of a carbureter with a shellacked float, the shellac will in time disintegrate slightly and leave such a deposit.

PRESSURE FUEL FEED

Detroit, Mich.—Editor Motor Age—How do the pressure systems of gasoline feed work? I do not see how the pressure is obtained.—M. O. P.

In Fig. 4 is illustrated the pressure fuel feed system used on the Matheson cars. It will be seen that the system consists of a lead from the exhaust manifold to a pressure valve and from there to the fuel tank. At the pressure valve is attached the gauge which shows the pressure in the tank. In addition there is the hand pump which supplies pressure for starting. When the motor is running the exhaust supplies the pressure. The gauge should never show more than from 1 to 1½ pounds pressure. The pressure in the tank can be regulated by the knurled nut on the top of the pressure valve.

MOTORS THE SAME SIZE

Laukin, N. D.—Editor Motor Age—Is there any difference in the horsepower of the model 59 T Overland and the E-M-F cars, both 1912 models? If there is any difference, which has the most power and why, as they are rated the same?—Jerome Ruzicka.

The motors of these two cars should develop very nearly the same power as they have the same piston displacement. If one has an advantage over the other in the matter of power it is due to superior design and workmanship and not to larger cylinders.

Wants Options Added Suggestions from Panama on What Should be Offered on Small Car

PANAMA—Editor Motor Age—The 1913 season will soon be in and no doubt all motor car manufacturers are already busy with ideas for their new models. Therefore, I think a few suggestions from readers of Motor Age would show what they would appreciate on new cars and in this way help the manufacturers a good deal. Here are my suggestions on moderate priced cars:

1—That the utmost attention be given to make the rear seats of the touring car as comfortable as possible. Seats should be deep, good springs at back and cushion soft—nothing will please the owner of a car like a fine, comfortable seat, and today it is hard to find this on a moderate priced car.

2—The manufacturer should allow the purchaser the option of getting better quality tires, paying extra for same.

3—A car on the style of Overland 59-T of \$900 equipped with electric self-starter and electric lights and sold for about \$1,300 would give any factory trouble to supply the demand.

4—Option to have electric lights from dynamo placed on a \$900 or \$1,200 car at an extra cost of about \$300 would be another good idea, as many people would like a small car with electric lights and wouldn't mind the extra cost.

5—Rack to carry an extra casing.

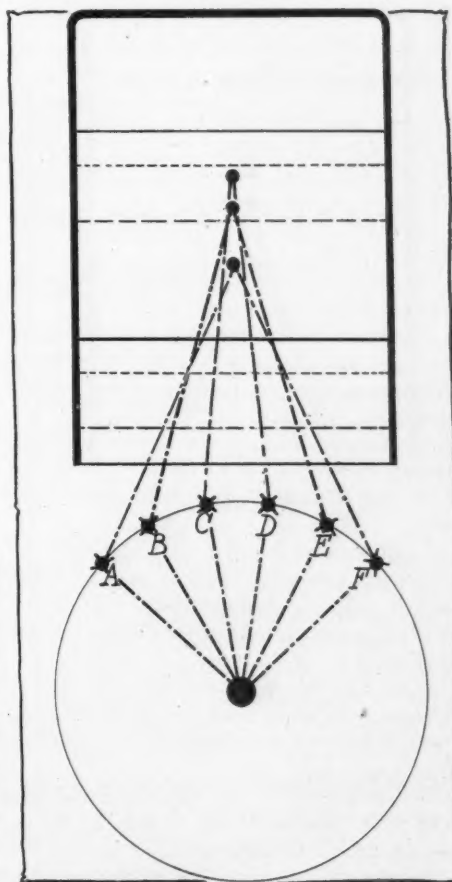


FIG. 2—ILLUSTRATING SPARK ADVANCE

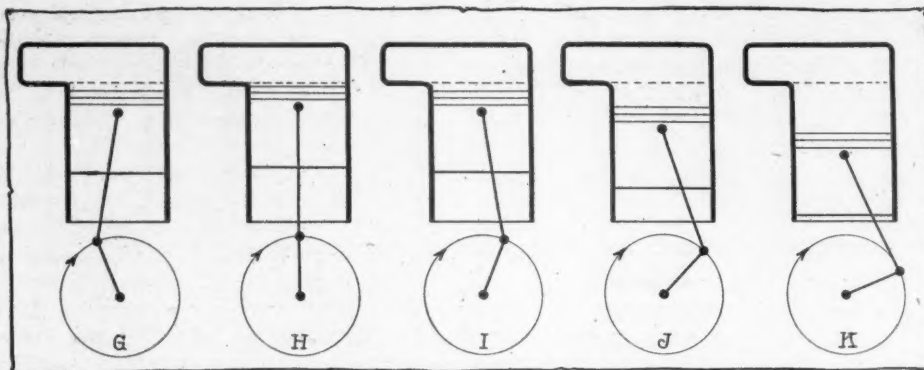


FIG. 3—POSITIONS OF PISTON WHEN SPARK OCCURS IN CYLINDER

6—A good strong foot pump instead of the kind usually given.

7—A strip of polished wood on top of doors and continued till the dash board instead of leather and leather tacks adds to the appearance of the car.

8—Option for having two sets of batteries for lighting lamps and a rectifier for recharging same at an extra cost.—A Subscriber.

REFERRED TO READERS

Brownsdale, Minn.—Editor Motor Age—Perhaps Motor Age can advise me the name of the firm that manufactures the following: An arrangement that fastens to the back wheel or hub of a motor car, running from which is a cable to a stake stuck in the ground several feet ahead. This cable will wind up on the device on the wheel and it is said is a sure pull out in mud or sand. If Motor Age could give me the name of the firm it would greatly oblige. I want to get the price and full illustrations of same.—L. L. Quimby.

TRANSMISSION GEAR RATIOS

Lansing, Mich.—Editor Motor Age—What are the usual transmission ratios of a three and four-speed transmission change-gear mechanism?

2—How does a pressure-feed gasoline system work?

3—How much braking surface should be allowed?

4—What is the formula for determining the distance and number of seconds for stopping a car, giving several coefficients of friction?—R. H. J.

1—A fair idea of the general run of transmission gear ratios may be obtained from the following. For three-speed gear-sets:

Cadillac, reverse 14 to 1; first 11.29 to 1; second 6.23 to 1; high or direct, which is 1 to 1 in the gearset itself, 3.43 to 1; this being the bevel gear reduction of the axle.

Columbia—Without rear-axle reduction, reverse, 3.08 to 1; first or low speed forward 3.08 to 1; second 1.65 to 1; third or high speed 1 to 1.

E-M-F 30—With rear-axle reduction of 3.25 to 1, reverse 15 to 1; first 12 to 1; second 6.5 to 1; 3.25 to 1.

Everitt 30—Reverse, 16 to 1; first 12 to 1; second 7 to 1; third 3.5 to 1.

Franklin—Reverse 14.05 to 1; first 10.98 to 1; second 5.84 to 1; third or high-speed, 3.3 to 1.

Knox—Reverse 12.96 to 1; first 10.08 to 1; second 5.7 to 1; third 3 to 1.

As examples of ratios in four-speed gearsets: Locomobile—Reverse 20 to 1; first 14.15 to 1; second 6.8 to 1; third 4.95 to 1; fourth 3.54 to 1.

Lozier 46, touring car—Reverse 12.11 to 1; first 8.95 to 1; second 4.93 to 1; third 3.1 to 1; fourth 2.63 to 1.

Alco—Reverse 10.35 to 1; first 10.35 to 1; second 6.26 to 1; third 4.19 to 1; fourth 3 to 1.

Chadwick—Reverse 9 to 1; first 9 to 1; second 4.5 to 1; third 3 to 1; fourth 2.5 to 1.

2—In Fig. 4 is shown the features of the pressure gasoline feed system employed on a 1910 six-cylinder Matheson car. The fuel supply tank is shown at the lower left hand corner of the sketch. Primarily the initial air pressure is introduced into the tank by means of the hand pump; but after the motor is started pressure is maintained by suitable piping and check valves communicating with the exhaust pipe E of the motor. A short study of the diagram will show the relations of the various parts. From 1 to 1½ pounds pressure should be maintained, and a gauge is provided on the dash to indicate to the operator the amount of pressure in the tank. The adjustment of the pressure may be regulated by turning the knurled nut of the pressure regulating valve.

NOTICE TO CORRESPONDENTS

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Two Rivers, Wis.—W. E. S.
Columbia, Mo.—A Subscriber.
Brookings, S. Dak.—Turntacks.
Cox's Creek, Ky.—O. J. C.
Freeport, Ill.—C. W.
Adair, Ill.—F. P. M.
Hutchinson, Kan.—W. L. J.
Little Rock, Ark.—A Reader.
Talmage, Nebr.—J. F. B.
Shelby, Nebr.—A Reader.
Independence, Wis.—
Chicago, Ill.—B. H. B.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

Knocks in the Cylinder

Reader Outlines Method of Locating and Remedying an Elusive Pound

SAUK CENTER, Minn.—Editor Motor Age—On being called to look at a sick engine that had formerly done splendid work, I was told by the owner that it had a peculiar knock at all times, more especially noticeable after the motor had warmed up. I took the car out and found that the motor would rapidly heat up no matter when or where you used it. There also was a terrible grating noise which he claimed was due to the connecting rods and crankshaft. The motor was almost new and had plenty of horsepower, but it was all in, so to speak. It had a centrifugal pump for circulating the water, and it seemed to me that the pump was the real seat of the trouble, but the owner said this was not the cause. I listened closely to the cut-outs' sing, and was convinced that the cause of the whole trouble was in the pump.

I went promptly to work and took off the cap which held the pump in its place, and as soon as the cap was removed the whole trouble as I had suspected was evident. The pin which held the four-bladed rotary pump in place had been sheared off by some obstruction in the pump box and would not permit the water to circulate freely. It also caused the grating sounds or squalling when the motor was running idle, but as soon as the high gear was used the noise stopped.

I had quite a time to get the sheared-off pin out, but succeeded at last and replaced the pump in its box and properly keyed it firmly on the shaft, then with some white lead I fitted the cap back on its bed and screwed it down tightly, filled the tank with water and started the motor. What a vast difference was my reward. The squalling noise was gone, the motor purred like a kitten, and this same engine would make that car fly up the hills that a little while before it could not take on the high at all.

The owner was much pleased to get this practical lesson, and said he had tried the carburetor, more cylinder oil, advancing the spark, giving more throttle, more and less air, etc., and the trouble was surely in the connecting rods and crankshaft! Now, one can easily see that the real cause of the knocking of the motor, which was caused by the non-circulation of the water, which caused the motor to heat badly at its head, thereby carbonizing the oil and losing its power, besides making a noise most disgusting to hear and which would cause everyone in hearing distance to turn and listen.

Motors made for pump cooling are not to be used unless the pump works and cools them, as they are entirely different from the syphon-cooling machine.—A. D. Carpenter.

Theory of Spark Advance

Range of Ignition Control, and How It Affects Efficiency of the Motor

CHICAGO—Editor Motor Age—I am desirous of obtaining some authentic information in regard to the advance or retarding of the spark in handling a motor car under certain varying conditions, as follows:

I understand that if it were not for the varying degree of richness of the charge due to varying load and varying speed of the engine, the spark should be advanced proportionately to the speed, but on account of the change in the mixture and amount of charge under varying degrees of load, the position of the piston at the time of ignition is not or should not be the same at the same speed of engine but under different load. I wish definite information as to this point, and would illustrate the point further, as follows:

Given a definite engine speed and the proper time of ignition for that speed, operating at half load, what will be the proper time for ignition for the same engine speed operating at full load. Should the ignition be advanced in the case of the full load, or retard, and relatively how much to obtain the best results?—R. B. Benjamin.

The spark lever always should be kept as far advanced as possible without obtaining an ignition knock or a noticeable loss of power.

In Fig. 2 a diagram is shown which is intended to indicate the range of spark advance and retard, representing different positions of a crankshaft, and the relation of the piston in the cylinder at these different positions. Referring to this diagram, if a motor is running at an extremely high rate of speed, the spark might be advanced so as to occur in the cylinder when the throw of the crankshaft, to which the lower end of the connecting rod is attached, is ascending, and at the point A, this combustion might be complete by the time the throw reached the point D, so a very strong pressure would be exerted upon the piston, which is as it should be. If the motor were being subjected to an extremely hard pull, as in ascending a hill on high gear, so that its speed is considerably reduced, and ignition were to take place at A, combustion might be complete at B or C, and the pressure or power-impulse on the piston head would tend to turn the crankshaft in a reverse direction.

If the car were traveling at a very low speed or if there were not sufficient momentum in the flywheel or the car itself, the motor would be stalled, or killed as the saying goes. Of course, if the car or motor were traveling at a sufficiently high rate of speed to carry the shaft and piston over this dead center a large percentage of the power would be applied in

the right direction, but considerable would be lost, there would be what is known as an ignition knock, and the strain on the bearings would be quite severe. On the other hand, if the motor has been slowed down considerably under a hard pull and the ignition is retarded so as to occur at about C or D, combustion might be complete at about E or F, or perhaps even a little farther down where the leverage on the crankshaft is greatest, and thus the greatest amount of the downward pressure on the piston is utilized. It must be remembered that the greatest power is dependent upon the momentum or torque of the flywheel. A motor always should be run with the spark advanced as far as possible without causing the motor to knock or lose power, and a motor will overheat if caused to run for any length of time with a retarded spark.

As few motorists really understand just how the power efficiency of a motor is affected by the spark-timing which generally is under the control of the operator, the following may be of interest: When a combustible mixture has been compressed in a cylinder by the rising piston and the spark occurs, a very small portion of the mixture in the immediate vicinity of the spark is ignited; and if the mixture is of the proper proportions and suitably compressed, the flame propagation throughout the entire combustion-chamber will be rapid. This is as it should be for best operation.

When combustion takes place, intensely-heated gases are formed which in their effort to occupy a larger volume of space, exert great pressure on the walls of the combustion chamber and upon the piston head. As a gas or gaseous mixture is compressed it becomes heated, and the greater the pressure the greater the heat. If a mixture is of proper proportions, the greater the pressure the more readily will it ignite and the greater the speed of flame-propagation or combustion. On the other hand, as the pressure of a combustible mixture is reduced, it loses its

heat, and its speed of ignition and combustion is also reduced. Thus it must be understood that to get the utmost efficiency out of a combustible charge, it must be ignited at or near the point of maximum compression.

Several interesting conditions may be shown with the diagrams of Fig. 3, which like Fig. 2, represents different positions of the crankshaft, and of the pistons in the cylinders. Let it be assumed that a car is being driven at a speed of about 30 miles per hour, and that the motor necessarily is turning over at a speed of about 800 revolutions per minute, the spark lever advanced so the spark occurs when the pistons are ascending as at G. Ignition, we will assume, is complete at H, and combustion at I, at which point the maximum pressure of the expanding gases is being exerted. Under these conditions, the motor runs smoothly and cool. Now by retarding the spark and advancing the throttle levers, it is found that the speed of 30 miles an hour still can be maintained. The motor is generating the same amount of power, but with the spark retarded and the throttle advanced; but after a 30 minutes' running the radiator begins to steam and we see that the motor is overheated. What is the cause? It is this.

The spark is retarded so that now it occurs when the piston is as at I, compression is already reduced so that ignition is slower and is not complete until the pistons are at J, and combustion is still incomplete at K. The explosive mixture is now richer in fuel so that more heat is given off than under the first mentioned condition, therefore the expansive force is greater than before, so that the speed of the motor is the same, but note the wall surface of the cylinder at K which now is exposed to this more intense heat. The water in the jackets not only has to take care of the heat absorbed by the walls of the combustion chamber, but also of an excessive amount absorbed by the cylinder walls.

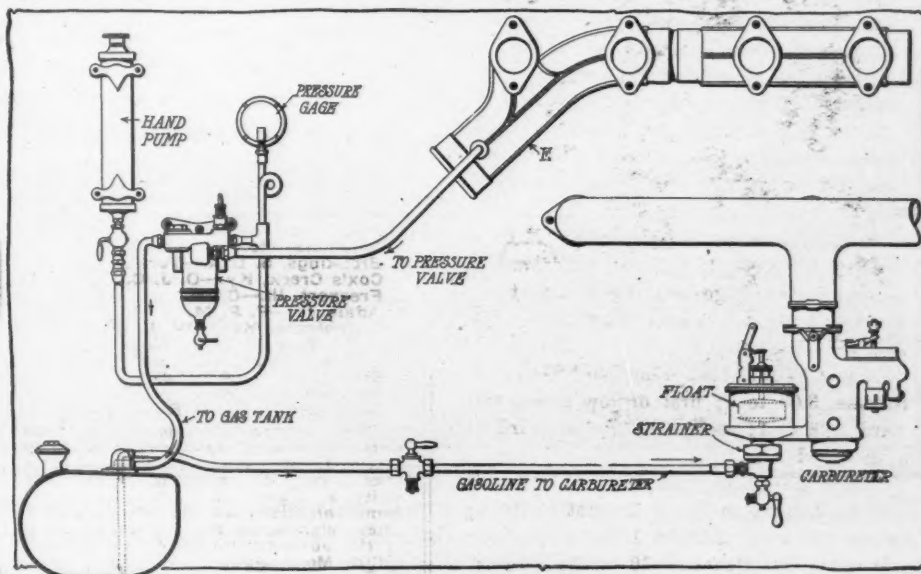


FIG. 4—DETAILS OF PRESSURE GASOLINE FEED OF MATHESON

Foundry Practice in Carbureter Factory

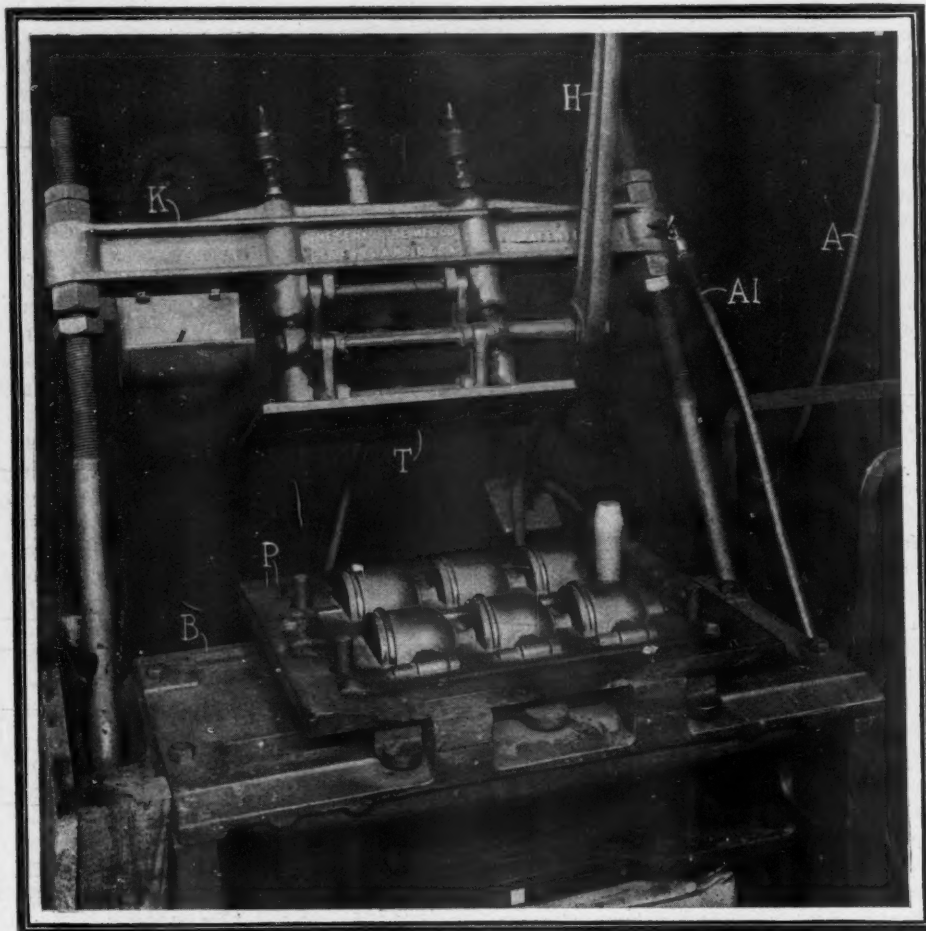


FIG. 1—HAND MOULDING MACHINE IN SCHEBLER FACTORY

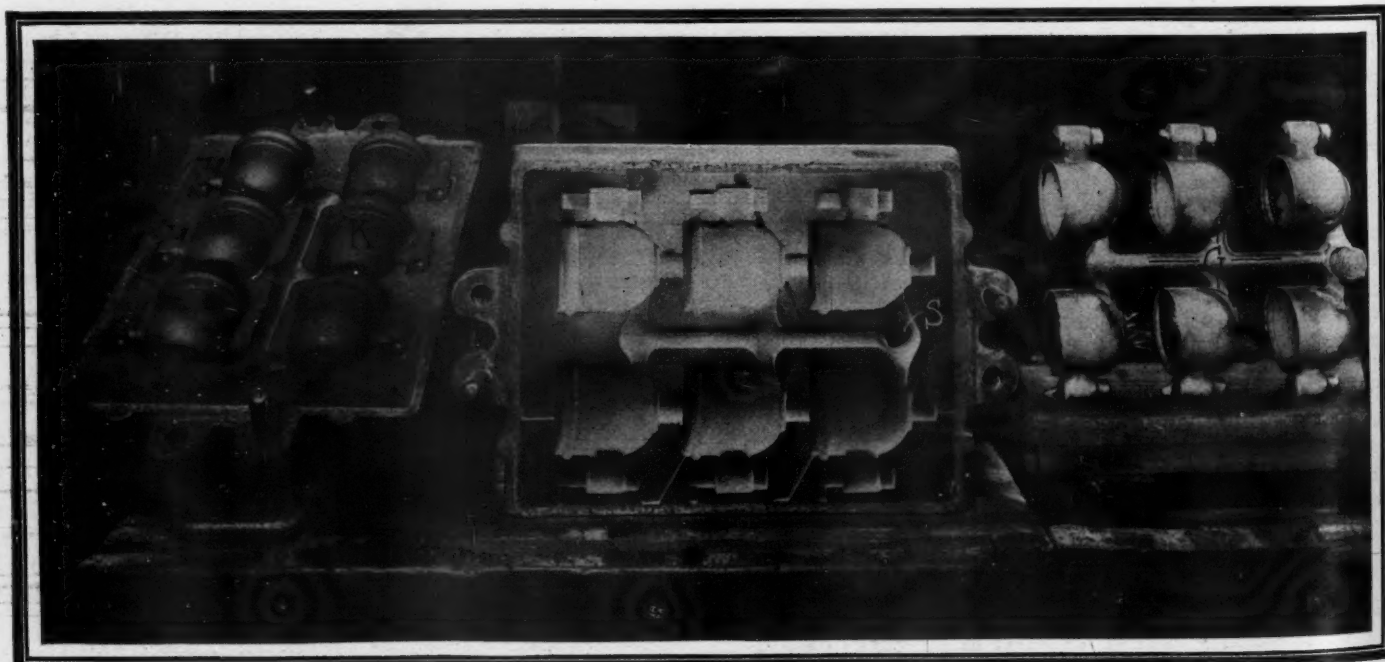
This machine operated by one man can make a mould for six carbureter bowl castings every 6 minutes

Moulding Machine Turns Out Six Forms in Each Minute

A MOULD a minute for one man is the rate of production in a modern foundry equipped with moulding machines. This speed is maintained in the brass foundry of Wheeler & Schebler, Indianapolis, Ind., in the castings they manufacture for the Schebler carbureter. This speed is for making the bowl castings of the carbureter, which are made six at a time in the one flask. With smaller castings the speed is much greater, often double this and some times, with very small parts, nearly ten times this pace.

Carbureter Moulding Machines

Making castings at this rate is made possible by a moulding machine such as illustrated in Fig. 1, and known as a hand-operated moulding machine. Its operation is simple. On the bed plate B of it lies the pattern plate P having six integral metal forms on it, each form being one-half a float chamber bowl of the model L carbureter. In making moulds with this machine a metal box F, known in foundry parlance as a flask, Fig. 3, is placed on the pattern plate. This flask is without bottom and top. Once on the machine its bottom is formed by the pattern plate. It is filled with moulding sand which is packed in lightly by hand, and when the flask is filled a top board A is placed on it, forming a cover, then pressure plate T of the mould-



Part 1

Part 2

Part 3

FIG. 2—HALVES OF FLASKS IN SCHEBLER FOUNDRY AND GATE CASTING

Part 1 shows one-half the mould with six cores K in place. Part 2 shows the upper half of the mould with the sprue or pouring opening S. Part 3 shows the six castings after removal from the mould

Casting Float Chambers in Schebler Plant

Transformation of Molten Metal Into Gasoline Vaporizers

ing machine is brought down onto the top board and by means of the handle H the moulding sand is pressed firmly against the bottom plate.

The flask is then lifted off the pattern plate by air pressure introduced through the pipe A, and the sand is moulded as in the center illustration Fig. 2., having in a word six cavities of the exact form of the half bowls on the pattern plate Fig. 1.

But this is only one-half a mould, there must be another half, an exact duplicate of the first one. The two of them constitute a mould. But they are not enough. If the two of them were put together face to face they would leave round wells or cavities, so to speak, for the metal, and the metal if poured in would be like solid float chambers without any space inside them for the float or the gasoline. The casting must be like a cup—merely a thin wall. To do this cores are necessary.

Cores Are Necessary

A core is a solid mass of sand of identical shape with the carbureter bowl but smaller in size. A core is placed inside of each mould as shown in K, Fig. 2, part 1. Here the six cores are placed in the six cavities of the mould, but the core does not lie close to the mould, there is an open space all around between them,

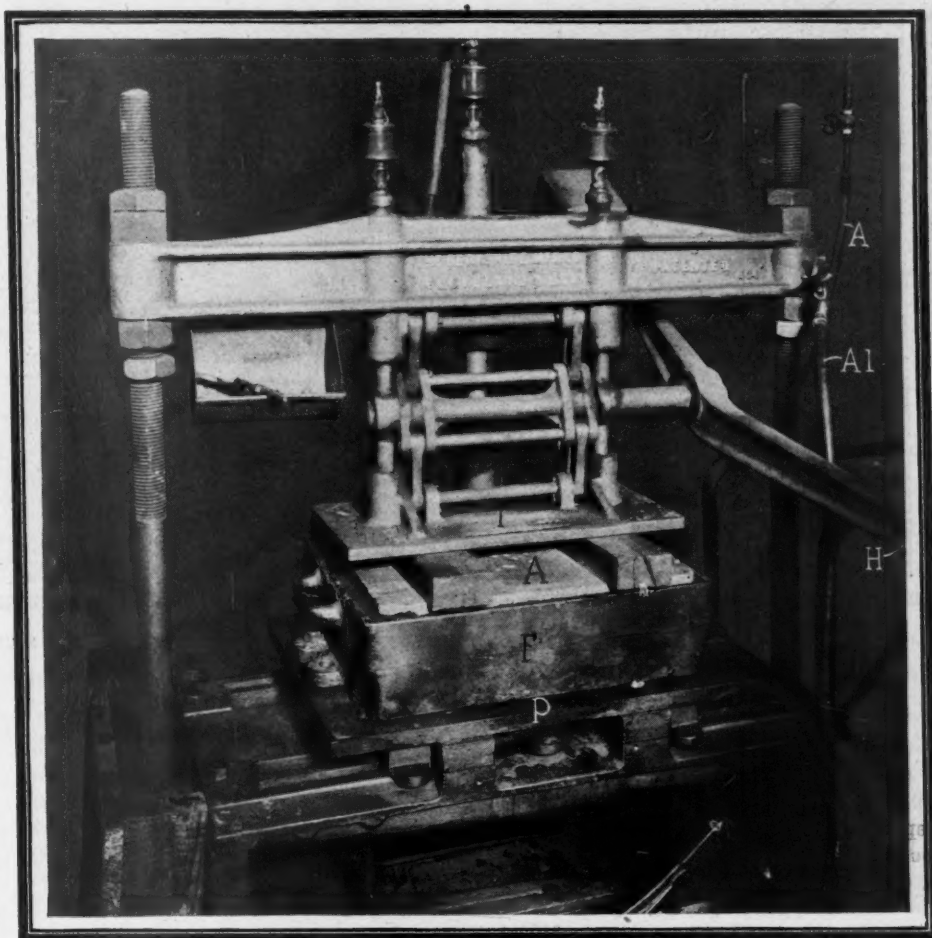


FIG. 3—MOULDING MACHINE PRESSING THE SAND IN THE FLASK
The top plate A is put over the sand and by the lever H the sand is firmly pressed on the pattern plate



Part 1—Half Moulds

Part 2—Pouring the Metal

FIG. 4—POURING MOLTEN BRASS TO MAKE CASTINGS OF FIG. 2

The molten metal is here shown being poured out of a crucible or pot containing 200 pounds of this metal. This illustration shows the halves F of the metal flask or box which contains the sand. The heavy metal plates M aid in holding the halves when pouring



FIG. 5—TABLE AND DEVICES USED BY CORE MAKER AT SCHEBLER FOUNDRY

K shows the core finished and just as it is when the halves N and N1 of the metal mould in which it was made are separated. The closed mould is shown in the center

this space being just as wide as the metal of the bowl is to be thick. When the cores are positioned, as illustrated, the next step is to place Part 2 on top of Part 1 and lock the two parts of the metal flask together. This done the molten metal is poured into a little opening S, called the sprue, Fig. 2, until all of the ramifications of the mould are filled. It is left to cool for 10 minutes, then the halves of the flask are separated and a hot casting Part 3, Fig. 2, drops out consisting of six complete carburetor bowls.

Pouring Molten Metal

In pouring metal to make six castings in a single flask it is necessary to have little channels for the molten brass to flow through from the sprue to each mould. Such a series of channels, which resemble a miniature river with its tributaries is known as the gate, and the connecting bars G of metal which fill this gate and hold the six bowls in the casting together when taken out of the mould, Part 3, is also known as the gate.

There is not any limit to the number of small castings that can be made in a single mould with a gate system of pouring. Six is the most suitable number for castings such as the bowl, but in smaller parts, such as needle valve levers in carburetors there may be nearly 100 formed in one gate casting. With small parts it does not take any longer to make 100 in this way than twenty-five or fifty, and the big makers have taken advantage of this to the fullest extent.

In operating a hand-moulding machine such as illustrated in Figs. 1 and 3, only one man is necessary, but with automatic moulding machines, now in use in

many plants, there being one in the Schebler foundry, five men are needed, and its capacity is practically five times as great as the hand machine. Its work, however, is not so satisfactory and the hand machines are in greater favor. With the automatic machine the sand is sifted into the flask by automatic means. The great value of hand or automatic moulding machines is speed and the reduction of space. With hand machines there is a pouring of metal every hour, whereas in the old days one pouring every 24 hours was the average pace. Not only has the moulding machine decimated time but it has practically decimated space. One man now does what it took a great many to do. By eliminating the other moulders foundry space is saved to such an extent that now concerns using many small castings are able to put their foundries on the upper floors of their factories, instead of having to erect separate buildings. This economy of space is of special importance in large cities where real estate values are exorbitant.

Two Thousand a Day

With the hand moulding machines a mould, as in Fig. 4, is made every 6 minutes by one man and by the end of the hour the twelve hand moulding machines have moulds ready to cast 220 carburetor bowls. In an 8-hour day this gives a capacity of 5,760 bowls. But all of the machines are not working on these bowls all of the time, there are many other castings needed to produce 800 carburetors a day which the Schebler plant is making. The foundry capacity with a force of 60, made up of moulders

and helpers, is able to furnish a much greater number of castings per day, and with additional men the capacity is 2,000 carburetor castings every 24 hours.

Core Making Important

The sand used in the moulds is No. 5 Newport. The moulds after forming, as in Fig. 2, are ready for use and are known as green sand moulds in distinction to other moulds that are placed in an oven and baked, and are consequently known as baked moulds. Baked moulds are much used in cast iron work where fine, close-grained castings are needed, many makers of high-grade motors using baked moulds for pistons and other castings.

Core making in a big foundry is as important as mould making, and in this plant there are thirty core makers with assistants as compared with sixty moulders with assistants. Core making is best illustrated in Fig. 5. This shows the table at which the core maker stands with his pile of sand, his tools and the means for producing the core. The manufacture of the core for a model L float bowl is illustrated, this core being the one seen in Part 1, Fig. 2. The core is a solid mass of sand. It is formed by a hollow metal form the inside of which is the exact size of the inside of the float chamber of bowl. The metal mould is made in halves, N and N1, held together by a couple of bolts. With the halves together the core maker puts in the sand and packs it into every corner and crevice of the mould, and when it is filled he hammers it down to make sure there is not a solitary opening remaining. He then opens the metal mould and the fin-

ished core K is seen at the left between the separated halves of the core mould, just as it came out of them.

Baking the Core

The second stage in the life of the core is baking. It, with a score of more of its brothers, are placed on a big metal grid, Fig. 7 and pushed into a core baking oven with a temperature of 1500 degrees Fahrenheit. The attendant is shown in the act of pushing the cores into the oven through the use of an ingenious overhead truck running on a pair of metal rails and carrying the outer end of the grid or shelf containing the cores. This grid is only one of five in the same oven, and in a big foundry there are ten or more of such ovens. The length of time the cores must bake in the oven depends on their size. Big cores may take 5 hours and little cores not more than 5 minutes. It is all a question of size. The bowl cores illustrated will bake from 1 to 1½ hours. They are just as sensitive as a baking of bread, and if not baked enough they are useless and if baked too much are burned and they are useless. Because of the care needed in this baking an oven attendant watches all of them very carefully. Once out of the oven the cores are piled in long rows on shelves where they cool, and once cool are ready to go to the foundry to take their place in the sand moulds as in Fig. 2.

When the metal is poured and the casting made, the core and mould are both destroyed. The core because of its dry

constituency is in a very brittle condition, but stable enough to withstand the flow of the molten metal around it when the casting is being made. Once the casting is taken out of the mould a few strokes of the hammers or a few prods with the screwdriver entirely breaks the core up.

The cores illustrated herewith are of the simplest character, but in the moulders' art some of the most elaborate core pieces have to be made. This is particularly true in making castings for motor car cylinders, where there must be core pieces for all of the waterjackets, as well as valve openings, centers of cylinders, and a dozen other places. In such work where cores are varied in shape it is generally necessary to use a fine wire skeleton in every core. The skeleton is placed first in the core mould and then the sand packed around the skeleton much as the flesh in the human body surrounds the bone skeleton. This wire skeleton stiffens the sand and holds it in place so that it can be safely handled and also so it will withstand the flow of the metal. When destroying the wired core of a casting it is often necessary to spend considerable time removing the core wires.

How Patterns Are Made

There is still another big department in every foundry, namely the pattern shop where the metal forms seen on the plate in Fig. 1 and also the core metal moulds in Fig. 5 must be made. No illustration of this pattern department is

shown herewith. The story of a pattern begins with a blue print which is handed to the pattern maker by the engineering department. From this blue print the pattern maker produces a wooden block known as a pattern. In present day practice the use of metal is gradually taking the place of wood. The metal pattern for each half of the bowl Fig. 1 is a perfect duplicate of the mould, the mould being formed by casting from the master pattern. This master pattern is carefully kept in a fireproof vault and when the pattern plate, Fig. 1, with its six bowls is injured another can readily be furnished the foundry.

Uses Producer Gas

With the pattern shop, the core department and the moulding machines the foundry is not complete, there is yet needed that all-essential, the metal which is to make the casting. Fig. 6 gives a sidelight on its life in the foundry. The copper is melted in small pots or crucibles, each containing 200 pounds of molten metal. These crucibles are lowered into small cylindrical pits, one crucible to a pit. When in this pit it is heated. This illustration shows a part of a bank of sixteen furnaces, each with its crucible. The heat comes from producer gas, this foundry being one of the first in America to use producer gas for this purpose. To supply the gas a special gas producer plant was installed. With the gas a great economy is claimed. A crucible with metal can be heated to the casting temperature in one hour. No. 210

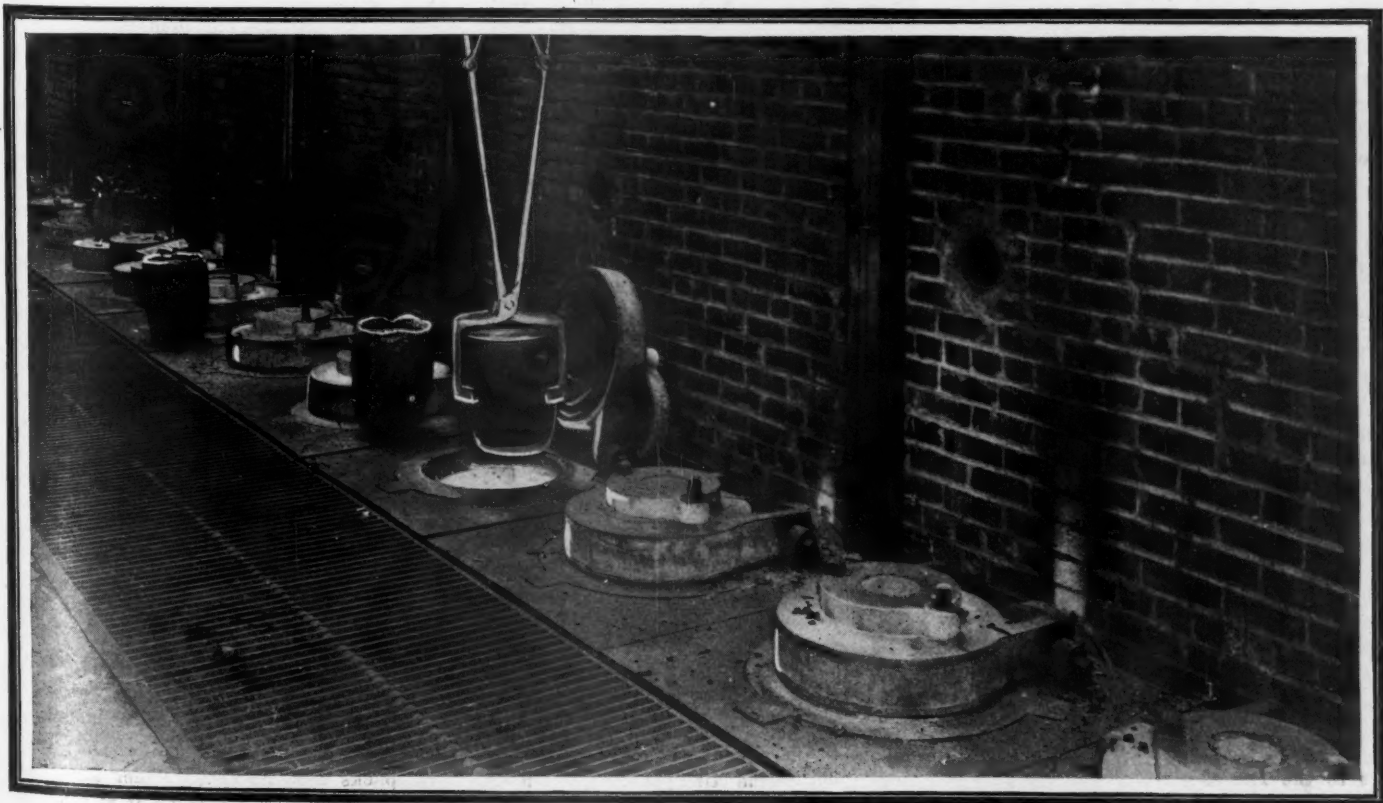


FIG. 6—PART OF A SET OF SIXTEEN FURNACES FOR HEATING THE METAL

For the first time in American foundry practice producer gas is used to heat the metal instead of oil. The gas is economical in that the crucibles will stand a great many more heats with it than with oil

crucible is used, and with producer gas it is possible to use a crucible much longer than when heated with oil.

Only copper is put into the crucible when heating. When this reaches the desired temperature the crucible is lifted out of the well, as illustrated, by means of a chain and overhead crane. The crucible is swung to the side and rested on the floor. Into the hot metal is then thrown the quantities of tin, lead and zinc which transform the copper into red brass. The exact quantities of these ingredients are secrets with the foundry man, but he weighs each with the utmost care and drops them into the hot copper. In a few seconds they are gone, the magic change from copper to brass is accomplished, and the men carry the crucible out and pour the burning fluid into the mold, Fig. 4.

Once a casting is taken out of a mould it is left to cool. As soon as cool it is loaded into crates and wheeled into what is known as a trimming room, where men sit at great cutting machines, which cut the bowl apart from the gate and trim off any rough pieces. The cutting knife

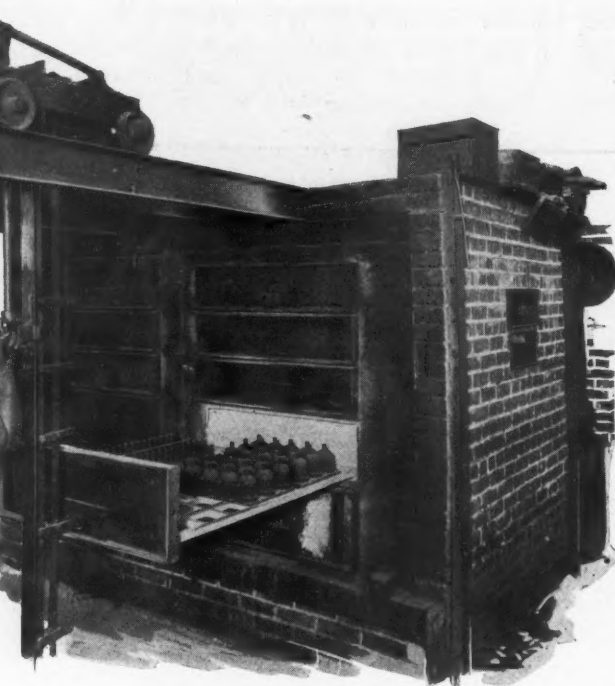


FIG. 7—AN OVEN FOR BAKING CORES

The cores are put in these ovens and baked at temperatures of 1500° F. Large cores are baked for several hours, small ones for a few minutes

is like a huge chisel that moves up and down about 6 inches. The operator holds the group of six bowl castings beneath the knife. He presses a pedal and down comes the cutter, one blow for each job. In a few seconds a set of six castings is cleaned up and the workman is ready for another.

After passing the cutting machine the castings are still in a rough condition.

They are passed on to tumbling barrel in which several hundred of them are placed at once. These barrels revolve steadily and inside the castings tumble one over another, rubbing off many of the high spots which could not be handled on the cutter. From this tumbling barrel they go to rough burnishing machines which bring them down to a condition smooth enough so that they can go to the machine shops to have all of the holes drilled, all of the threads tapped and the many other jobs done. When through all of this they go to the burnisher who goes all over them with the grinding wheel and leaves them a mirror smooth finish. Lastly they take a trip to the painting department, where they are sprayed

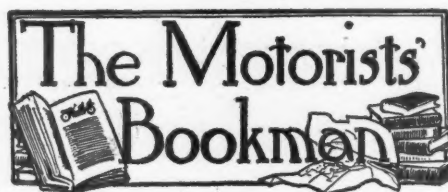
with lacquer from a glass bottle, much the same as milady sprays perfume from the atomizer. This is the final step in the preparation of the casting. It is now ready for the final assembly, where it takes its place in the carburetor and assumes its function as the chamber which contains the gasoline and carries the float that regulates the quantity of fuel fed to the motor.

Art of Rubber Growing

THE very title, "The Whole Art of Rubber Growing," indicates somewhat the nature and scope of this book of 160 pages which deals with the plantation rubber industry of the old world. After an interesting introduction on the early experiments by the Indian government in plantation and tapping the author, W. Wicherley, takes up in order the various types of rubber trees, or as he calls them, "the trees that count."

The hevea, or Para rubber tree, whose home is Brazil, takes first place in this category. It is satisfactorily acclimatized, and for an alien thrives well in Ceylon and the Malay states, either in low, marshy lands or in altitudes of from 60 to 1,800 feet. Although other alien trees, when treated in an up-to-date, scientific manner, have proven to be equal if not exceeding the hevea, still, the author claims, the hevea always will be a favorite with the old-world planters, although in the acclimatizing process it displays many peculiarities.

In speaking of the Para tree the author says: "Para rubber is a surface-feeding tree. In recent experiments on the growth of this tree it was discovered in 2 years from the date of planting many speci-



mens attained a height of 30 feet and 14 inches in circumference. Six years from planting they were 50 feet high and 30 inches in circumference. Seventeen years found them 79½ inches in circumference. One of such trees yielded in 1910 96.5 pounds of dry rubber.

"The seed of the Para rubber tree readily germinates and seedlings are planted out in wet soil until they have reached a height of 18 to 24 inches. Propagation by cutting is recommended, where it is desired to plant out a large area at once. A method employed is to take cuttings near the ends of the branches but farther back than any of the leaves * * * the holes to receive these plants should be 18 inches wide, 12 inches deep, and filled with good soil. * * * At the end of the sixth year a tree so planted should be 20 to 30 feet high. * * * The best results have been obtained by planting trees 8 to 10 feet apart.

"A plantation 6 years old, where the trees are 12 by 12 feet, showing an average girth of 18 inches, ought to yield 250 pounds of dry rubber to the acre per annum. At 7 years old the plantation should be in its prime and possess not fewer than 20 inches in girth. Such a plantation will easily give dry rubber 400 pounds per annum to the acre," which is considered a very satisfactory return.

Many different systems of tapping have been employed in developing this industry: First the V-shaped excision, which has been discarded. Then came high-tapping which required ladders and scaffolding, the excision being made at a height of 30 feet from the ground; this resulted in a satisfactory yield of latex but was slow and expensive and which has been abandoned for the "safe and simple method of bark incision employed by the seringueiro in the Amazon forests."

Some of the other rubber trees described, in which the author takes up the subjects of propagation, length of growth, environments, tapping systems, value of the latex, etc., are: Manihot Glaziovii, the Ficus, Castilleja Elastica, Funtimia Elastica, and the new Manihots. Published by the West Strand Publishing Co., Ltd., London.

The Motor Car Repair Shop

ADJUSTING a set of brakes should in all cases be a very simple operation, but owing to the negligence of some drivers this often becomes a very difficult task. To adjust a set of brakes, first see that the wheel bearings are properly adjusted, then adjust your brakebands until there is just enough clearance for about two ordinary thicknesses of paper all the way round when the brakes are released. All working parts should be well cleaned and oiled, so that perfect freedom of action is assured. Owing to loose wheel bearings, brakebands are often worn unevenly; in such cases new linings or bands are necessary.

Straightening Front Axles

It is not an uncommon sight, especially on light cars, to see the front wheels in a vertical position or flaring out at the bottom instead of converging inward at the bottom. This generally indicates a sprung axle; and is caused either by habitually overloading the car, or as a result of one hard jolt, or a series of jolts, such as are encountered in negotiating rough roads at recklessly high speeds or striking an unseen gully, etc.

When an axle is sprung, it not only is unsightly, but it puts a binding strain on the steering knuckle pins that makes the steering wheel work stiffly; it increases the wear on the steering mechanism and wheel bearings, and by throwing the cross-connecting link of the steering gear out of adjustment, causes excessive wear on the tires of the front wheels.

Generally when an axle is sprung, it is necessary to dis-assemble it from the car, heat it in a forge and then straighten it. To perform this operation quickly and effectively without the necessity of dis-assembling the axle from the car, the Studebaker branch in Chicago has equipment which is applied as illustrated in Fig. 1. It consists of a heavy iron bar B, having a hook H at one end, a heavy bolt A with an eye in it at the other end, and a strut or yoke arm R slidably mounted on the bar R. Unfortunately, the lower end of the arm A is hidden from view, but its lower end passes through a slot in the end of the bar B, and its end is threaded and provided with a winged nut, so that when the device is applied to the axle as shown, by taking up on this nut a bending strain is put on the axle.

The yoked arm R generally is placed just below the point or near the point where the axle is bent, then when the nut on the eye-bolt A is screwed up the exposed end of the axle is drawn down into its proper original position. For the heat required to facilitate this straightening process, a large torch T is used, gas being admitted through the hose G, and air

Hints to the Amateur on Adjusting Brakes, Sprung Front Axles and Speedometer Repairs

through the hose I. A valve is employed in the air line to regulate the mixture at the nozzle, and there is a valve at the other end of the gas hose for regulation of the gas supply.

Speedometer Repairs

There seems to be a prevailing disposition on the part of many owners and repairmen, when the general annual overhauling of a car is in progress, to overlook or neglect those outside fittings which, under ordinary circumstances, give very little trouble. In this category the speedometer comes in for no small share of neglect. When the car goes into the shop, this instrument is generally disconnected, then carefully laid away with other fittings until the time comes for their replacement, and that is often all the attention it receives. On the other hand, if the owner has been having trouble with the speedometer, he reports the matter to the repairman and then it, too, receives attention. The busy repairman, however, never attempts to repair the internal mechanism of a speedometer, but send it immediately to the nearest speedometer agent or expert, which is as it should be. It is folly for a repairman, driver or owner not familiar with the construction and characteristic troubles of a speed indicator, to waste his time and perhaps dam-

age the instrument, just to satisfy his curiosity, or to fix something—he knows not what—without the ability and the special tools required to do it.

All reputable dealers in these instruments have agents in the larger cities throughout the country who have in their employ skilled mechanics who do nothing else but apply, overhaul and regulate them; the shops of these workmen are equipped with special tools and devices, without which the necessary repairs and adjustments are most difficult and perhaps impossible; the troubles to which the speedometer are subject are comparatively few, and usually of such nature as to be quickly remedied under proper treatment; with the knowledge of the expert and aid of his special appliances 5 or 10 minutes is all the time required to learn the cause of the trouble, and in most cases the most extensive repair and adjustment requires less than 30 minutes.

What is more, no charge whatever is made for the services of these workmen, as it is the desire of the manufacturers and dealers to keep their instruments in first-class condition. Motor Age begs to remind its readers that the speedometer is on the job whenever the car is in motion, that it, too, requires the attention of an expert about once a year; and that it is advisable and practicable to take advantage of the free services of the manufacturers' representative when the instrument is in need of repair or adjustment.



FIG. 1—EQUIPMENT USED IN STRAIGHTENING SPRUNG FRONT AXLES

CONSOLATION for de Palma—As a consolation prize for de Palma, the Bosch company has given him \$250 for his record-breaking work in the 500-mile race at Indianapolis.

Barred from Cemeteries—Saginaw, Mich., has closed its cemeteries to motor car testers. Following complaint from citizens, the council committee on parks and cemeteries has served notice that no more speeding will be allowed in those public places.

Indiana's May Registrations—Motor registrations during May in Indiana were the largest of any month since the registration law was passed in 1905. There were 3,146 registrations, including motor cars and motor cycles, an increase of 711 over the registrations of May 1911. The motor car trade in Indiana this season has gone far beyond expectations.

Military Withdraws Ban—Colonel Geo. S. Young, commanding at the Vauclaver barracks, Washington, has recently issued a permit to motorists to pass through the post without the formality of securing a pass, providing they keep within the speed limits. Heavy trucks, as usual, will be barred. This will enable motorists to view the beautiful grounds without leaving their cars.

Will Help New Jersey—Pennsylvania's motor law does not permit the arrest of Keystone state car owners who may violate the speed limit or commit other offences in New Jersey and other states and then escape to their home state, but the officials of the Pennsylvania highway department are willing to do all in their power to help catch the lawbreakers. This position was taken last week by Thomas E. Boyd, registrar of the motor car division of the department, who received a letter from the motor registration authorities of New Jersey asking that holders of Pennsylvania licenses be prosecuted or licenses revoked when it was found that they were breaking the laws in that state. The Jersey official desired reciprocity in arrests as well as in privilege to run in other states. Mr. Boyd stated that the laws in Pennsylvania

do not permit arrests, but he would be glad to co-operate by sending notice of infraction of laws to persons who may be reported and to warn them.

Marion County Buys Oil—The commissioners of Marion county, Indiana, have let a contract to the Standard Oil Co. for 210,000 gallons of road oil at 3½ cents a gallon. The oil is to be used in oiling the roads in the vicinity of Indianapolis, 70,000 gallons to be used. This will be the first time the county has oiled roads on an extensive scale and the work probably will be extended still more next year if it meets with the results anticipated this year.

Baltimore Plans a Run—A sociability motor car run will be conducted by the Baltimore News Saturday, under the auspices of the Automobile Club of Maryland and the Baltimore Motor Car Dealers' Association. The route will be from Baltimore to Annapolis, and the start will be at 12:30 o'clock. Any car that does not cross the checking line at Annapolis by 5 o'clock will be disqualified for a prize. There will be no speeding, and to prevent this Motor Vehicle Commissioner Roe will have the route patrolled. The contest will be run under the rules of the contest board of the A. A. A.

Potato Growers Buy Cars—As the result of the harvesting of wonderful potato crops in the famous tuber belt of Wisconsin, of which Stevens Point is the center, during the last 3 years, nearly every farmer in Portage county has purchased a motor car of one kind or another this year. In one small township alone, that of Almond, thirty-four potato growers have purchased cars since March 15 and it is expected that by the middle of summer every farmer of any consequence whatever will be riding around in his own machine. During the last two seasons potatoes have commanded high prices and in many cases the proceeds of such crops

exceeded two or three times the present selling value of the lands upon which the crops were raised.

Dunkards Recognize Motor Cars—According to action taken by the Dunkard church, by a conference held near Englewood, Ohio, recently, members can use motor cars for pleasure. The question, when it came before the conference, precipitated considerable discussion, and there was much opposition to the ruling.

Means Better Minnesota Roads—Since the Elwell state road law has been declared constitutional by the Minnesota supreme court the state highway commission has been asked for \$2,000,000, covering nineteen state highways. The longest proposed road is from Duluth to St. Vincent, 350 miles, at a cost of \$1,500 a mile.

Central Illinois Road Race—A 100-mile road race is being worked up by the drivers of Bloomington, Ill., as a Fourth of July attraction. The merchants will give some cash prizes for the winners. A course will be arranged through McLean county which will take in the best roads. The services of the militia have been secured to guard the corners where the cars will pass and thus protect the drivers and public from possible accident. This race will be the principal attraction on the natal day in central Illinois.

Improving Lake Shore Drive—The new municipal administration at Milwaukee, Wis., has renewed efforts to complete the lake shore drive in Milwaukee, which is to eventually equal the Sheridan road in Chicago. The manufacturers of the city have promised to dump all refuse, ashes and cinders along the lake front instead of in a haphazard manner, and the city is now obtaining riparian rights along the shore of Lake Michigan to the northernmost point of the city. The Chicago and Northwestern Railroad has been asked to build a spur track to various points along the harbor shore to facilitate the



MOTORISTS OF MINNEAPOLIS AND ST. PAUL TURN OUT FOR ORPHANS' DAY AND GIVE HUNDREDS OF DOLLARS

Four Winds

dumping of refuse from the factories. Several links in the drive are already completed.

Columbus on the Route—The Columbus Automobile Club of Columbus, Ohio, has taken up with the promoters of the Cleveland News endurance run, the matter of having the run go through Columbus, Ohio, instead of having it follow the course originally laid out. The promoters of the run are interested in the matter and the efforts of the club may be successful.

St. Louis Reliability Planned—The St. Louis Automobile Manufacturers' and Dealers' Association will hold a 3-day reliability run the first week in August. The event probably will be over a route from St. Louis north in the state as far as Kirksville, returning over another route. A tour through little Egypt or lower Illinois is being considered, however. The probabilities are that the Missouri route will be the one taken, as Illinois roads are too bad.

Big Illinois Run—A tour of McLean county, one of the largest in Illinois, will be made on June 25, by a party of motorists. The original date selected was June 5, but the late spring and delay in corn planting made a postponement necessary. One hundred car owners will make the trip and each will carry one or two highway commissioners, every township in the county being inspected. The commissioners with the poor roads will be taken to the townships with the good roads and the contrast may prove effective in inspiring the laggards to better directed effort. The tour is unique and is attracting much attention. It was thought that such a trip would be of greater value and produce more benefit to the men who own cars than the usual reliability run, taken previously every year by the McLean county club. A banquet will be served at the conclusion of the tour on June 25 and

a number of authorities on good road building will deliver addresses to the commissioners and others interested.

One More New Club—The car owners of Union county, Pennsylvania have organized an association to be known as the Union County Motor Club. The following officers were elected: O. P. Miller, president; Clyde Gundy, secretary; Aaron Stahl, treasurer. The object of the association is to aid in securing better roads, etc.

Grand Rapids Club Election—The Grand Rapids Automobile Club, of Grand Rapids, Mich., has elected the following officers: President, Chester Idema; vice-president, Fred M. Pantlind; secretary, Harold B. Woodcock; treasurer, William McNabb. The board of governors comprises the officers and H. J. Steketee, J. R. Jackson and Dr. F. C. Warnshuis.

St. Louis Has Orphans' Day—The annual orphans' day outing of the Automobile Club of St. Louis was held Wednesday, June 12. Over 1,600 orphans had rides in cars donated by St. Louisans. Each child was given a flag, a button and a horn when put into the car. A trip around the park was made, and then the cars went into the country for a couple of hours. Each car made three or four trips each loaded with little ones.

Cannot Block Highways—That a driver of a United States mail wagon has no more right to obstruct the highways than any other horse-drawn vehicle was the decision of the federal court commissioner at Madison, Wis., in the case brought against O. G. Erickson, a Madison chauffeur. It appears that a rural mail carrier refused to allow the chauffeur to pass and he had to run on low speed for several miles, finally forcing his way by. A charge of obstructing the United States mails was brought, but ridiculed by the court commissioner. Several cases have been decided in Wisconsin against other horse-

drawn vehicles which refused to permit the faster moving vehicle to pass and heavy fines have been imposed under the state law prohibiting such obstruction.

Club at Ogdensburg—A new club was organized at Ogdensburg, N. Y., last week, following a meeting of motorists addressed by Frank D. Lyon, secretary of the state highway department, and County Superintendent of Highways Walter F. Wilson. Andrew Irving was elected president.

New Stand for Speedway—It is planned by the Indianapolis Motor Speedway Co. to build a new steel grand stand before the proposed fall meet, which according to present plans, will be held August 31 and Labor day. The new stand will take the place of grandstand A and will be of fireproof construction and equipped with chairs. It is understood the new stand will cost in the neighborhood of \$100,000.

Rounding Up Laggards—The officers of the McLean County Automobile Club, of Bloomington, Ill., are assisting the police department in locating cars not supplied with licenses and are reporting all cars carrying an obsolete tag. As a result of this espionage, few car owners are neglectful and new licenses are taken out promptly when the old expires. The club has also issued small cards containing the rules of the road and explaining the proper method of turning a corner at points where traffic is heavy.

Ohio Registrations—According to the report of State Registrar of Motor Cars J. A. Shearer, there are now more cars in use in the state of Ohio than were registered during the whole of the year 1911. Up to June 6 the number of cars registered was 50,132 as compared with 45,788 during the year 1911. The report for the month of May shows that 6,400 cars were registered and the surplus of the receipts above the expenses amounted to \$27,233.86. This amount will be turned over to the highway commissioner for road improvement. For the first 5 months of the year 1912, the net receipts including interest were \$226,239.58.



HUNDREDS OF YOUNGSTERS A MOST ENJOYABLE OUTING, INCLUDING LONG DRIVE THROUGH THE PARKS

Commercial Car

one occasion covered 115 miles in a day. Stops run from 3 to 15 minutes.

The trip from the main factory to the city proper takes from 45 minutes to 1½ hours, depending on the kind of load and the stops. All work near at hand is handled by horses. The hauling of the drums from the steamer docks and railway yards is handled by horsed trucks, which take the load to the warehouse at the garage nearby. Here the motor trucks come for their loads of carbonic drums for the longer routes and the horse rigs for the shorter. These containers are delivered to soda fountains, saloons, etc., all over the city, and as stated before the average stop in this delivery is around 9 minutes. The average run is 9 miles each way.

Performances of Trucks

About the same length of trip falls to the lot of the 3-ton machines, for the main factory at Thirty-first and Kedzie streets is about 9 miles out. Each truck is doing the work of three to four teams. They cost more to run but give greatly increased service than would be gotten in any other way. "They are an expensive luxury," said the superintendent, "but they pay on the long haul."

The 3-ton machine designated No. 50 ran for 139 days in the first 6 months of its service, making 464 trips; an average of 3.29 trips per day. Runs averaged 9 miles each way or 18 miles per trip. The truck worked on the average 23 days out of each month. The average daily ton-

nage was 173.6 and the tons per trip carried 2.2.

Eight hundred and twenty-six miles were covered each month, or an average of 35.7 per day; 8.28 gallons of gasoline were consumed per day and 2.23 pints of oil. The truck ran 4.63 miles per gallon of gasoline and 13.33 miles per pint of oil. Cost per ton mile figured out on the fuel basis as \$.0114.

Truck No. 49's Record

The record of truck No. 49 is shown in an annexed table and figures close to the totals and averages just named for its sister machine.

Records of performances of the 1-ton truck are interesting; figures being furnished for operation on dates from September 27 to October 1, inclusive, in 1910. The same truck is still running in a more varied service at present, and making greater mileage and many more stops as stated above, but these early figures compiled by this company are none the less interesting.

On September 27 the car was in service for 6 hours and 15 minutes. During this time it was running for but 2 hours and 5 minutes, 4 hours and 10 minutes being spent idle. Three hours and 10 minutes was due to unloading delays, 1 hour to loading. On this day the car covered 26 miles, consumed 2½ gallons of gasoline and 1 pint of oil; but 2.85 tons were hauled. On the following day the car was in service 9 hours and 15 minutes, running for 5 hours 5 minutes of that time. Four hours 10 minutes was spent standing,

1 hour 50 minutes being lost in unloading and 2 hours 20 minutes in loading. Eighty-five miles were traveled on this date, 7 gallons of gasoline were consumed and 2¾ pints of oil. But 2.21 tons were hauled.

September 29 was spent largely in hauling goods to the factory from the downtown depot, changing the figures of the former days materially. The car was in service 9 hours in all and running 5 hours and 25 minutes of that time. Three hours and 35 minutes was spent standing, 2 hours and 5 minutes due to unloading hindrances and delays and 1 hour and 30 minutes to loading conditions. Seventy-six miles were covered, 6 gallons of gasoline consumed and 2¾ pints of oil. Tonnage for the day amounted to 5.48.

One Day's Run

Twenty stops were made on October 1 and 56 miles covered. The truck was in operation 8 hours and 50 minutes and running 4 hours 55 minutes, 1 hour 55 minutes being lost in unloading and 2 hours in loading. Three and one-half gallons of gasoline were used and 1½ pints of oil.

GETS VENEZUELA CONCESSION

Consul Thomas W. Voetter, La Guira, Venezuela, S. A., reports that J. M. Alamilla Ramos has been given the exclusive right for 20 years to carry passengers and freight between the towns of San Felix, Upata, Guasipati, El Callao and Turehero, by motor car or steam motors. He is permitted to use the present wagon road and required to keep it in repair, but must not interfere with the present traffic methods by cart and mule trains.

TABLE SHOWING WORK OF A 1-TON FRANKLIN FOR THE LIQUID CARBONIC CO., OF CHICAGO

Starting point.	Destination.	Time to destination (in minutes)	Time from destination (in minutes)	Actual running time (in minutes)	Loading time (in minutes)	Unloading and delay (in minutes)	Weight of load (in pounds)	Miles	Gasoline (in gallons)	Oil (in pints)	Cost per ton mile	Cost per mile	No. of stops
Wells and Michigan.	1902 Blue Island Ave.	20	10	10	10	10	1170	85	7	2½	.0356	.0098	14
	Twenty-second and Union Ave.	10	10	10	10	10							
	Thirty-first and Indiana Ave.	15	10	10	10	10							
	Thirty-seventh and Indiana Ave.	5	20	70	15	10							
Wells and Michigan.	119 Monroe St.	15	10	10	15	10	320	85	7	2½	.0356	.0098	
	Hawthorne and Division Sts.	10	10	45	25	10							
Wells and Michigan.	802 Wells St.	5	10	10	10	10							
	2042 North Clark St.	10	10	10	10	10							
	1103 Webster Ave.	5	10	10	10	10							
	1662 West Division St.	15	10	10	10	10							
	543 West Division St.	5	10	10	10	10	370	85	7	2½	.0356	.0098	
	553 West Division St.	5	10	10	10	10							
Wells and Michigan.	Hawthorne and Division St.	10	10	20	60	50	2570	85	7	2½	.0356	.0098	
Wells and Michigan.	Wilmette Club House.	60	55	115	60	50	4430	85	7	2½	.0356	.0098	
	Totals			305	140	110							

SUMMARY—Total time car in service, 9 hours 15 minutes; total time car running, 5 hours 5 minutes; total time car standing, 4 hours 10 minutes; (a) unloading and delay, 1 hour 50 minutes; (b) loading, 2 hours 20 minutes; total miles traveled, 85; gasoline consumed, 7 gallons; oil consumed, 2¾ pints; average number of miles per gallon of gasoline, 12 14/100; average number of miles per pint of oil, 30 9/10; total tons hauled, 2 21/100.

Work of Truck in Delivery Service for a Big Creamery

SELDOM is it considered feasible to keep an accurate record of work done by a motor truck day in and day out, but it has been found possible in the instance of a Pierce-Arrow, worm-driven, of 5 tons capacity, that is owned by Towar's Wayne County Creamery of Detroit, Mich. The routes taken by this truck every day and the loads carried do not vary materially and because of this condition it is possible to show just what the truck does, how many wagons it has replaced and the daily mileage, which is kept down, owing to the numerous stops made. Two shifts of men are employed to operate the truck, owing to the long hours the vehicle is in service.

The truck leaves the garage at 3 a. m., and does not return until 12 midnight, making 21 hours' service daily through the week and 12 hours on Sunday. It leaves the Towar factory every morning with a load of wholesale bottled milk and cream which it distributes to the grocery stores and factory dining rooms on the east side of Detroit. It takes from 3 a. m. to 1 p. m. to peddle this load and make collections, etc. The truck, of course, brings back empty bottles and crates which weigh about 3 tons. It formerly took three teams and one single wagon to do this work.

On the truck's return to the plant at 1 o'clock it makes two trips to the railroad stations for milk, loaded with 5 tons each trip. The second driver takes the truck at this time, 2 o'clock. The truck now makes a trip to the north end branch, a distance of 4 miles, with a full load of bottled goods to be delivered the following day by wagons stationed at this branch. On the return trip it has a full load of empty bottles weighing 4 tons. The truck then makes another trip to this branch with the same load. Upon its return at about 6 o'clock, the crew has its lunch. Two trips to the railroad depots for supplies follow lunch, then one trip to the east side branch, a round trip of 10 miles. Upon its return from the east side there is usually another trip to the railroad station.

The afternoon and evening loads are all 5-ton loads with an overload of $\frac{1}{2}$ ton occasionally. Mr. Towar estimates that it would take five large teams to handle this afternoon and evening work, while now it is done with two men on a Pierce-Arrow truck. The morning load consists of the following:

CASE MILK		
	Cases	Pounds
648 quarts milk.....	54	3,186
1,800 pints milk.....	90	4,950
100 half pints cream.....	5	295
40 pints cream.....	2	110
60 quarts buttermilk.....	5	295
BULK MILK		
5 cans milk....10 gals. each		550 pounds
8 cans milk.... 5 gals. each		324 pounds
5 cans milk.... 3 gals. each		145 pounds
10 cans milk.... 2 gals. each		100 pounds
5 cans cream... 2 gals. each		100 pounds
Total load		10,075 pounds



NEW ARGO ELECTRIC TRUCK AS A TROUBLE WAGON

Ninety-five 10-gallon cans of milk is a load for depot hauling, a total of 10,450 pounds. The daily mileage of this truck is between 50 and 60 miles.

TALKING BIG TRUCK SHOW

It is within the bounds of possibility that the summer of 1913 will see a commercial vehicle exhibition and demonstration conducted by the N. A. A. M. on a gigantic scale. This exhibition may or may not take the place of the winter shows as now held, this being a subject for which the opinion of the trade will be canvassed. The subject was discussed at some length at the meeting of the executive committee last week and referred to the show and commercial vehicle committees for consideration.

At the same meeting the standard warranty recommended by the commercial vehicle committee was adopted, as was the standard caution plate recommended by the same committee.

GARY PRAISES MOTOR TRUCK

Chief Feely of the fire department of Gary, Ind., has written a communication to an official of one of the principal Wisconsin cities praising a Garford motor-driven hose machine that the fire department is using in the Indiana town. Chief Feely says in part:

"We have had this machine in service since December 15, 1911. It has done everything claimed for it. It carries an equipment consisting of 1,600 feet of hose, one two-way siamese, one three-way siamese, one ax, one 6-gallon hand pump, one deluge set, six play pipes or nozzles, two pike poles, one basement pipe, one circulating or basement pipe, two hydrant gates, one reducer, one extra tire and rim and one door opener. The roster that this machine carries to a fire consists of the following: Chief, assistant chief, captain, lieutenant, two chauffeurs and eight pipemen. The speed obtained while carrying this load to a fire is 45 miles an hour if necessary."

"We have tested the machine with this load, which is 9,520 pounds, on country roads and taken all hills on third speed. It will pull through sand up to the axles; and on February 21 after the great snow storm of the day and night before, we made a test run of 5 miles or more and went through snow drifts from 1 to 5 feet and averaged a speed of from 18 to 25 miles an hour. Since the machine was put in commission we have responded to sixty-one alarms of fire and traveled 120 miles besides the several test runs we had, and we have had no trouble whatsoever with the truck."

BALTIMORE ADDS TO FLEET

The two new motor hose wagons recently purchased by the Baltimore fire department are now in service. One does duty in the business section of the city and replaces No. 32 hose wagon while the other is stationed at Forrest park, one of Baltimore's growing suburbs and is known as No. 40 company. These wagons participated in a test of the high-pressure service in connection with the new high-pressure motor hose wagons and made a fine showing. All of these hose wagons are Mack vehicles. High-pressure hydrants are being placed on all the downtown hose wagons and it is likely that within the next 6 months or so more motor apparatus will enter the Baltimore department.

PONTIAC NOW HEADQUARTERS

The main offices of General Motors Truck Co., which heretofore have been located in Detroit, will be at the Pontiac factory, where the lighter duty gasoline trucks and electric truck are manufactured. The factory organizations, both at Pontiac and Owosso, will remain intact, as heretofore, with an executive direction from Pontiac. The present branch offices of General Motors Truck Co. will be retained at Detroit, and located at the new garage and service station, which is being erected at Twelfth street, Lafayette boulevard and Fort street.

Key Transportation System Up to Efficiency of Truck

"MOST of those who are in any degree familiar with motor trucking will accept it as an established fact that the better motor trucks are efficient from the standpoint of machinery and that they are capable of doing much more work than horses," said a representative of the Peerless Motor Car Co.'s truck department the other day.

"The real problem in motor trucking now concerns the reformation and readjustment of conditions and customs that have grown up around beast haulage, so that the truck may have full play in the realization of its potential efficiency. It is a simple matter of saving time, of keeping the truck moving so that its motion minutes will exceed to the largest possible extent, its stopped time.

"Arnold Bennet calls time 'the raw material of everything.' It is indeed the raw material of motor truck service. But this should not be misunderstood. It does not mean that the truck should be speeded up. Under favorable conditions our present normal truck speeds of 10 to 15 miles an hour are sufficient to revolutionize our street and highway transportation.

"The problem is to reduce the truck's stopped time by bringing the efficiency of the methods used in loading and unloading up to the efficiency of the truck. It includes also such traffic arrangements as will permit the truck to proceed at its normal speed through the streets.

"Other transportation agencies are affected by the same conditions. Louis D. Brandeis has recently attributed one of the greatest leakages in the system of railroad management to the needless stopped time of rolling stock in the yards. The great ore and grain boats which ply on the great lakes owe their efficiency very largely to the fact that they are loaded and unloaded with amazing speed. Ten thousand tons of ore has been put into one of the great carriers of the Pittsburgh Steamship Co. in 25 minutes—it is always done in less than 2 hours. The same cargo is unloaded in from 3½ to 5 hours.

"Quick work at the terminals is just as valuable in the operation of the motor

truck. Delays are costly not alone because they mean a tied-up investment, but because they rob the truck of an opportunity to create values, what the economists call place values, in excess of the amount represented by interests on the truck investment.

"Successful co-operation in motor trucking is a three-cornered affair. It must include the shipper, the truck operator, and the receiver, whether all three happen to be parts of a single company, or are separately managed. The more complete the co-operation is the more work the truck will do, and the greater will be its value.

"One firm of building supply dealers with which I am acquainted, by making an investment in hoppers and other quick-loading devices, has increased the efficiency of its trucks far beyond what was necessary to make the equipment pay for itself. But at the other end of the truck trips it has beast haulage conditions to contend with. Building contractors are still blind to the advantages of co-operating with the dealer in his truck operation. They place their concrete mixers in places inaccessible to trucks. Thus they delay the unloading process, reduce the motion minutes of the truck, and impair its efficiency. By so doing they are also delaying their own deliveries.

"Retailers who receive motor truck deliveries from wholesale houses are equally indifferent to their own interests, chiefly because they do not realize what motor truck service means to them, or might mean to them. By tardy receipt of consignments they keep the truck standing idle, delaying freight for the next man on the route as the one before delayed theirs. Co-operation here would keep things moving for the benefit of everyone.

"Wharves for the exclusive use of motor trucks would be a great help at water shipping points. Trucks are now delayed by slow-moving teams. Suitable hoisting devices installed on such wharves would greatly reduce the truck's stopped time. Trucks need never rest as horses do and idleness means nothing but loss. The

Society for the Prevention of Cruelty to Animals asks no more consideration for a motor truck than for a compound locomotive.

"Our greatest truck problem, to sum up, concerns not the truck itself, but the manner of its use. We need to key every feature of the transportation system up to the efficiency of the truck. The motor truck has been so badly needed for the last decade that it will not take long to work the problem out when its importance is thoroughly understood. The wonderful things already accomplished by the motor truck bring home the necessity of the solution."

NEW KNOX DUMPING BODY

A new type of coal-dumping truck has been recently built by the Knox Automobile Co. for the Fall River Iron Works, Fall River, Mass. Although this truck is of 7-ton capacity it can be readily dumped by hand by one man in a few minutes. The dumping mechanism was designed and built by the Knox company in its own shops especially for this heavy duty work and is of the windlass type. The chassis is fitted with a short wheelbase so that the pivot on the dumping body permits a satisfactory balance of the load, thereby facilitating delivery. The body is made of heavy oak panels strongly re-enforced with sheet metal sides on the interior and flared toward the rear to prevent the coal from packing when being dumped.

COMMERCIAL BREVITIES

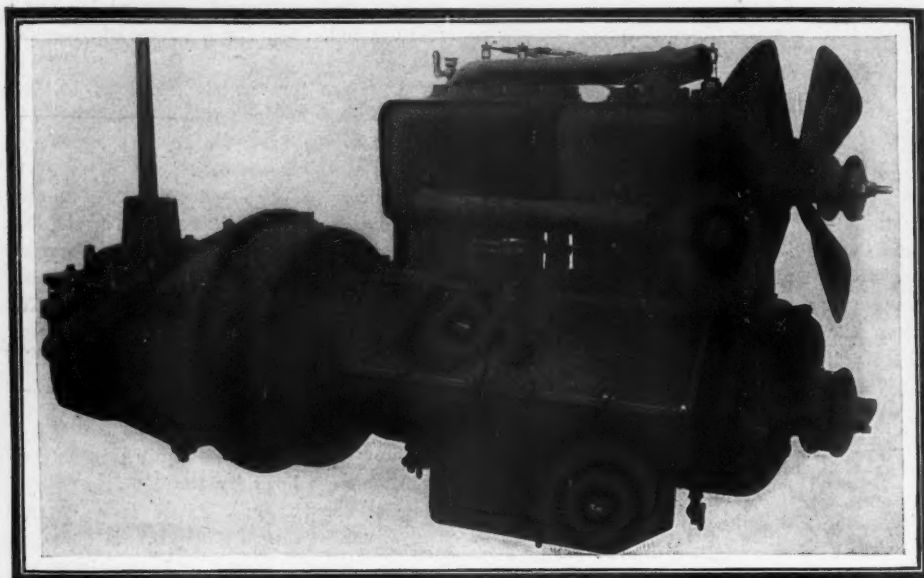
The common council of Milwaukee has voted to purchase the first two of the proposed six pieces of motor truck fire apparatus at once, and bids will be called for within a week or so for two combination hose and chemical trucks. The cars will carry 1,000 feet of hose, the necessary chemical apparatus and six men.

The first motor patrol wagon to be installed in the Boston police department was turned over to Police Commissioner O'Meara last week, it being made by the White company, and has the ambulance feature also. It will be installed in the West Roxbury district. This is but the beginning of a plan to eliminate the horse.



WHITE 3-TON TRUCK AND TRAILER HAULING A FLAG POLE 87 FEET LONG, 28 INCHES IN DIAMETER AT BASE

Features of New Empire 25 Described



LEFT SIDE OF UNIT POWER PLANT SHOWING CRANKCASE FILLER PIPE

AS a big brother to the little Empire 20, the Empire Automobile Co. announces the Empire 25. In many respects the new and larger model is similar to the older one, but in construction and design throughout it embodies greater size and strength. Unit power plant arrangement is used, with the motor, clutch and gearset rigidly connected.

The four cylinders of the motor are cast in pairs and have a bore of $3\frac{1}{2}$ inches and a stroke of $4\frac{1}{2}$ inches, giving the motor a stroke-bore ratio of nearly 1.3 to 1. The cylinders are offset $\frac{1}{2}$ inch and are of the L-head type, with both intake and exhaust valves on the left side. A feature of the motor construction is that while the valves are all enclosed, each is enclosed in a

semi-cylindrical housing, so that access to any one valve for adjustment may be had without exposing the others. The valves all have a clear opening of $1\frac{1}{2}$ inch.

Three bearings support the crankshaft, which is $1\frac{1}{2}$ inches in diameter at the bearings in front and center, while at the rear bearing where the flywheel is attached the diameter of the crankshaft is $\frac{1}{8}$ inch larger. The latter bearing is 4 inches in length, the center one is $2\frac{3}{4}$ inches, while the forward bearing has a length of $3\frac{1}{2}$ inches. Connecting rod bearings are $1\frac{1}{2}$ inches in diameter and 2 inches in length.

Lubrication of the motor is obtained by crankcase splash from a constant level

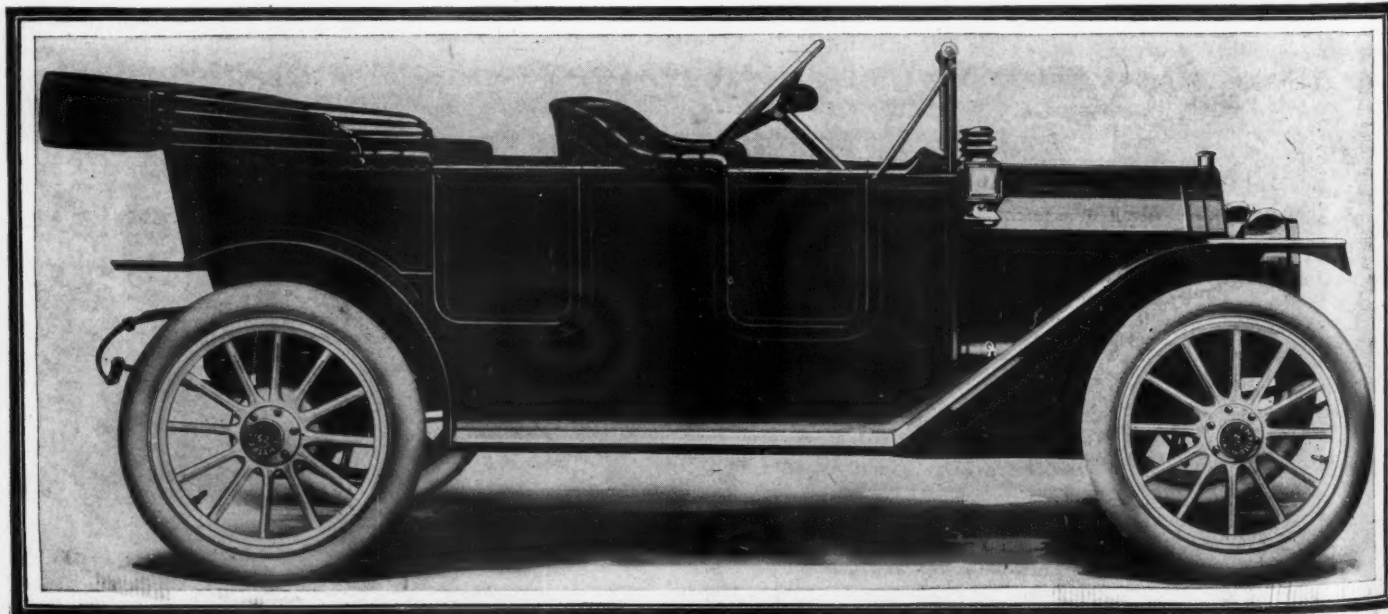
Separate Inclosure of the Valves—Fixed Ignition Without Battery—Center Gearshift Lever—Some of the Characteristics of the New Car

maintained by force pump which is in communication with a reservoir of large capacity. Ignition is supplied by a K-W magneto of the stationary winding type, strictly high-tension with fixed spark, there being no batteries employed. Thermosyphon cooling is employed in conjunction with a large belt-driven fan.

Gearshift Only Lever

The clutch is of the dry-plate type, with 9-inch disks lined with Raybestos. A selective three-speed sliding gearset is used, the gears having a $\frac{7}{8}$ -inch face. The shafts are mounted upon annular ball bearings throughout. Gearset control is by means of a lever in the center of the driver's compartment. Clutch and service and emergency brakes are operated by foot pedals. The throttle lever is mounted above the steering wheel, and on account of the set spark no spark lever is needed. The steering gear is of the irreversible, full worm and gear type.

Power transmission from the gearset is through a universal joint on the front end of the enclosed propeller shaft, to a semifloating rear axle. Service brakes are external, contracting on the rear wheel brake drums. Emergency brakes are internal. The springs are three-quarter elliptic in the rear and semi-elliptic in front. The front axle is an I-beam section drop forging, while the frame is a channel sec-



EMPIRE 25 FIVE-PASSENGER TOURING CAR

A Big Brother of Older Model 20

Four-Cylinder 3½ by 4½-inch Motor—104-inch Wheelbase With Five-Passenger Aluminoid Body—Emergency Brake Operated by Foot Pedal

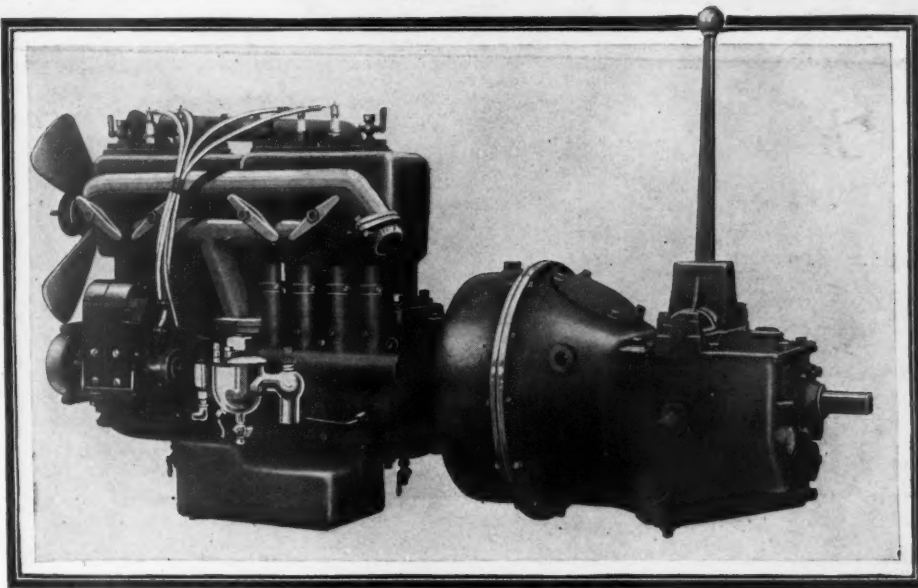
tion of pressed steel, dropped to give a low center of gravity and easy riding qualities. The wheelbase is 104 inches and 32-inch tires are supplied, both front and rear.

The chassis is fitted with a five-passenger touring car body of aluminoid steel wood trimmed. It is of the fore-door type, full vestibuled with straight lines from front to rear. Entrances to both sides of the front compartment are made possible by the central location of the gear-shift lever. Inside handles are provided on the doors, and all doors are extra large. Full nickel trimmings are fitted throughout the car. A feature of the construction of the car is the casting of the dash and cowl in one piece, following high-grade design.

MEXICO'S RUBBER DISCOVERY

Guadalajara, Mexico, June 8—Much importance is attached to the recent discovery of another wild plant in Mexico which has a high percentage of rubber producing properties. It is a perennial creeper that grows profusely in various parts of the states of Guanajuato, Jalisco and Michoacan and probably in other portions of the republic.

It is claimed by scientists who have been making experiments with the plant that it is capable of yielding more rubber to the ton of raw material than the guay-



RIGHT SIDE OF EMPIRE UNIT POWER PLANT SHOWING HOW VALVES ARE ENCLOSED

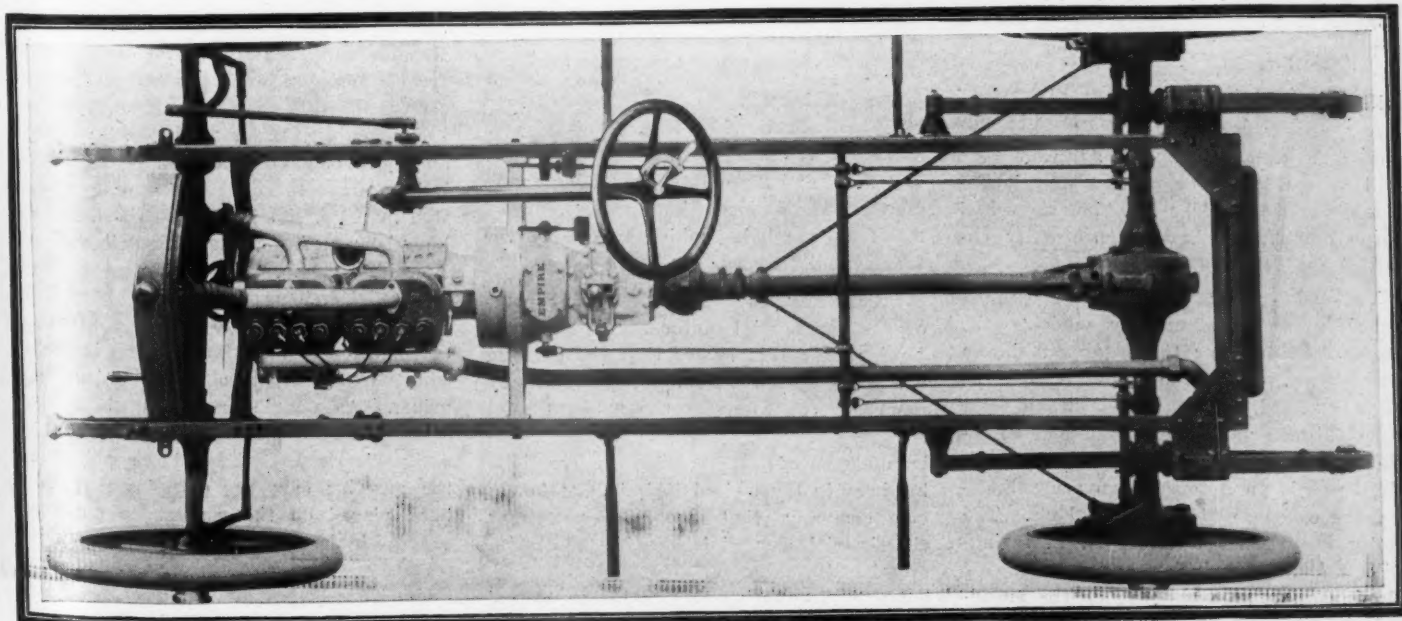
ule shrub which has brought much wealth to northern Mexico during the last few years. The botanical name of the vine has not been announced. It is said to be peculiar to Mexico and heretofore has been considered a worthless species of vegetation. In some localities the vines climb to the tops of large trees.

It is estimated that its available tonnage greatly exceeds that of the guayule shrub and that it can be made a big source of crude rubber supply. The rubber is extracted from the bark and woody portions of the vine and from its unripe fruit, all of which contain large quantities of a white, milky fluid from which the rubber is obtained.

More than \$65,000,000 gold has been

invested in the guayule rubber industry in northern Mexico since the discovery was made about 10 years ago that that wild shrub contains caoutchouc properties of high commercial value. Enormous quantities of guayule rubber have been exported to the United States, where it enters largely into the manufacture of tires and other rubber products.

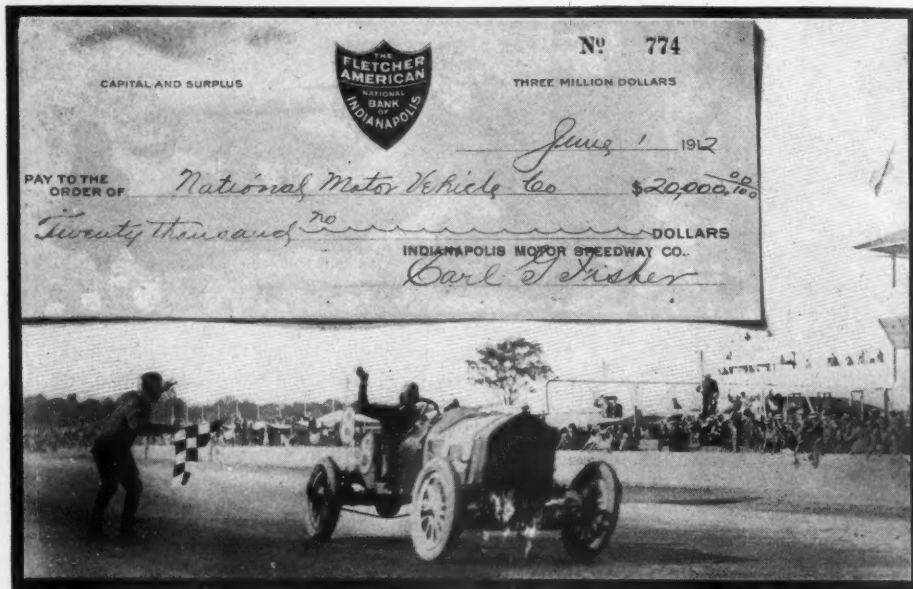
Plans already are being made for exploiting the creeper vines of this region in the same manner that the guayule shrub is now being utilized. Several factories will be erected for extracting the crude rubber, and it is expected that this new source of supply will soon greatly augment Mexico's output of crude rubber products.



PLAN OF EMPIRE CHASSIS SHOWING TRANSVERSE MUFFLER AT THE REAR



Among the Makers and Dealers



DAWSON WINNING 500-MILE RACE AT INDIANAPOLIS AND CHECK HE GOT FOR IT

MARION Gets New Engineer—The Marion Motor Car Co. has named as its chief engineer Matthew B. Morgan, who has been with the Chalmers Motor Co. for the past three seasons.

Frank Jones Makes a Change—Frank H. Jones, who for 10 years has been general superintendent for the Warner Gear Co., of Muncie, Ind., has severed his connections with that concern to become interested in and associated with the Muncie Gear Works as general superintendent and mechanical engineer.

R. C. H. Makes 1913 Plans—Thirty thousand R. C. H. cars will be built next season according to the announcement made by the R. C. H. Corporation. Although the R. C. H. factory now covers over 8 acres, many additions are planned to take care of the 100 cars a day average that will be maintained next year, among these being a new assembly building, 265 by 400 feet, and a foundry addition that will nearly triple the present capacity of the department. The machine shop and forge department have been greatly enlarged recently.

Packard Building New Truck—To round out its line of heavy-duty vehicles, the Packard Motor Car Co. is announcing a 5-ton truck. The 5-ton model is like the 3-ton Packard, except that it has a more powerful motor and more massive construction. To insure the longevity of the vehicle, there is an automatic governor limiting the speed to 8½ miles an hour. The motor is 40 horsepower, S. A. E. rating, with a bore of 5 inches and a stroke of 5½ inches. The wheelbase of the standard chassis is 14 feet long, but there are optional sizes giving frame lengths behind

the driver's seat from 12 to 16 feet. There are standard and optional bodies adapted to meet a wide range of requirements.

Motor Mart for Syracuse—The Syracuse Automobile Dealers Association, of Syracuse, N. Y., plans to organize the leading dealers of the city in a motor mart, on a large tract of land near the center of the city. The plans embody a large two-story building with a big demonstration court in the center, roofed with glass, the whole to cost about \$100,000 and to accommodate some seventeen stockholders in the concern.

Marmon Adding to Plant—In order to enable the concern to increase its output, the Nordyke & Marmon Co., of Indianapolis, is building substantial additions to its plant. A new office building is being built. This will be a two-story brick structure, 43 by 155 feet. The general and executive offices will be located on the first floor, and the enlarged drafting rooms on the second floor. Two stories, 52 by 243 feet, are being added to one of the factory buildings.

Truck Business in England—The reports of the commercial motor car industry in England for 1911 shows that the demand was greater than the supply, causing many new concerns to enter the field. Consul Albert Halstead reports that the American commercial motors have made little headway in the United Kingdom, "though one company that uses its passenger chassis with a special body is steadily increasing its sales for light delivery purposes, while another light delivery wagon, such as is used by the department stores in the United States, is offered for sale."

The British manufacturers assert and the British technical papers aver that the heavy type of the British commercial motor is far superior to any made in this country.

Good Business in Bridgeport—According to figures shown by motor car dealers in Bridgeport, Conn., and vicinity, May was the banner month of the season. Sales showed a gain of 34 per cent over the corresponding month last year. The greatest demand during the month was for light roadsters and touring cars ranging in price from \$700 to \$1,000. The sale of motor trucks also showed an increase fully as great.

Edwards Passes Up Indianapolis—In a letter to Carl G. Fisher, C. G. Stoddard and F. E. Edwards say they have found it impossible to locate the proposed plant of the Edwards Motor Car Co. in the middle west and that it will be necessary to locate the factory in the east. Mr. Fisher has been making every effort to obtain the plant for Indianapolis and with James A. Allison offered to donate a factory site of 30 acres near the Indianapolis motor speedway.

Women Interested—What is believed to be the first company organized and incorporated by women has been formed in Grand Rapids, Mich. It will be known as the Page Auto Hoist and Specialty Co. The incorporators are Mrs. Addie A. Walther, Mrs. Laura Werfel and Mrs. Gertrude E. Vanderberg, together with twenty other prominent local women. The new company starts with \$50,000 capital and will manufacture motor hoists, potato sorters, fruit ladders and other specialties.

British Prosperity—British statistics, according to the Daily Consular and Trade Reports, show that the motor car industry, from a financial point of view, was so successful for 1911 that most of the factories had to enlarge their facilities. Although an improvement in car design was noted, it is claimed there was an average reduction in price. Some of the British makers have been trying to meet the prices of the American cars. This effort, not proving successful, it is now rumored that the British manufacturers are trying to form a combination to manufacture cars in larger quantities in order to meet the American prices. As yet there has not been that demand for electric machines in England as in America, the Englishman preferring the gasoline car; the electric cars that have been placed on the market do not compare with the American car. The scarcity of electric vehicles in England is explained somewhat by the fact that municipal and private companies have given little attention to increasing the demand

for current by way of furnishing it cheaply, for charging batteries, or establishing charging stations. However, before the American electricians can be introduced successfully in the British market, the establishment of charging facilities, etc., must be made more available.

Expansion at Muncie—The Muncie Gear Works, of Muncie, Ind., has commenced the construction of a new factory building, to be of concrete blocks and steel. This plant will be used for making transmissions, steering gears, levers and differential gears, as well as jackshafts and sprockets and also cut gears for both pleasure and commercial cars.

Death of George H. Smith—George H. Smith, president of the George H. Smith Steel Casting Co., of Milwaukee, and brother to A. O. Smith, head of the A. O. Smith Co., motors, trucks, parts, frames, etc., died suddenly at Milwaukee, aged 49 years. His father, C. J. Smith, founded the C. J. Smith & Son Bicycle Co. many years ago. Thirteen years ago George H. Smith organized the steel casting company, which has supplied castings for motor cars for a large number of manufacturers.

Benjamin Elected President—The Syracuse Automobile Dealers' Association of Syracuse, N. Y., held its annual election of officers last week. C. Arthur Benjamin was chosen president and others officers elected were: Vice-president, M. W. Kerr; treasurer, George H. Norris; secretary, Theodore Young; acting secretary, W. R. Marshall; directors, Simon Silverman, W. R. Sjaw, John W. Lee, Jr. The annual outing of the association will be held the third week in June at Trenton Falls, near Utica, N. Y.

Rockwell Succeeds Adams—Berry Rockwell has been appointed general advertising manager of the United States Motor Co., to succeed Gridley Adams, resigned. Mr. Rockwell was advertising manager of the Maxwell-Briscoe Motor Co. before the formation of the United States Motor Co. Since then he has been advertising manager of the Maxwell division. In his new capacity, Mr. Rockwell will have general supervision of all advertising of the Maxwell, Columbia, Stoddard-Dayton, Brush and Courier motor cars and Sampson motor trucks.

Henderson Secures a Factory—The Henderson Motor Car Co., manufacturer of the Henderson car, has culminated a contract for a long-time lease with the National Casket Co. for the factory site belonging to the latter company, located on North West and Fourteenth streets. The Hendersons have been using this factory for some time, holding an option on the lease, but the final incidents of the deal were not fully settled until the contract for a long-time lease of the factory by the Henderson Motor Car Co. was consummated. The building is four stories high, fronting 212 feet on West street and

106 on Fourteenth street. There is a ground area of 5 acres in addition to the factory floor space.

Not the Muskegon Concern—A description of the Continental Junior engine was published on page 51, Motor Age, June 6, and its maker was said to be the Continental Motor Mfg. Co. of Muskegon, Mich. This was in error. The Continental Junior engine is made by the Continental Engine Co., formerly of Chicago but which recently moved to Dallas City, Ill.

Another Ford Assembly Plant—St. Louis is to get an assembling plant for the Ford Motor Co. The Ford concern purchased last week a big plot of ground at Sarah street and Forest park boulevard, just opposite the plant of the Dorris Motor Car Co. Here a plant will be built immediately and 5,000 cars will be assembled next year from parts shipped from Detroit. The plant is to supply the Fords for the Southwest.

No Bids for Findlay Plant—The Findlay Motor Co. plant at Findlay, O., was offered for sale at that place Friday afternoon by Special Master Commissioner Fred H. Kruse. The lowest bid that could be entertained under the order of the United States court was \$137,000 and no bids were offered. The company was originally promoted by L. E. Ewing, of Geneva, O., and was upheld by local investors. It is said to be one of the best equipped electric truck plants in the country.

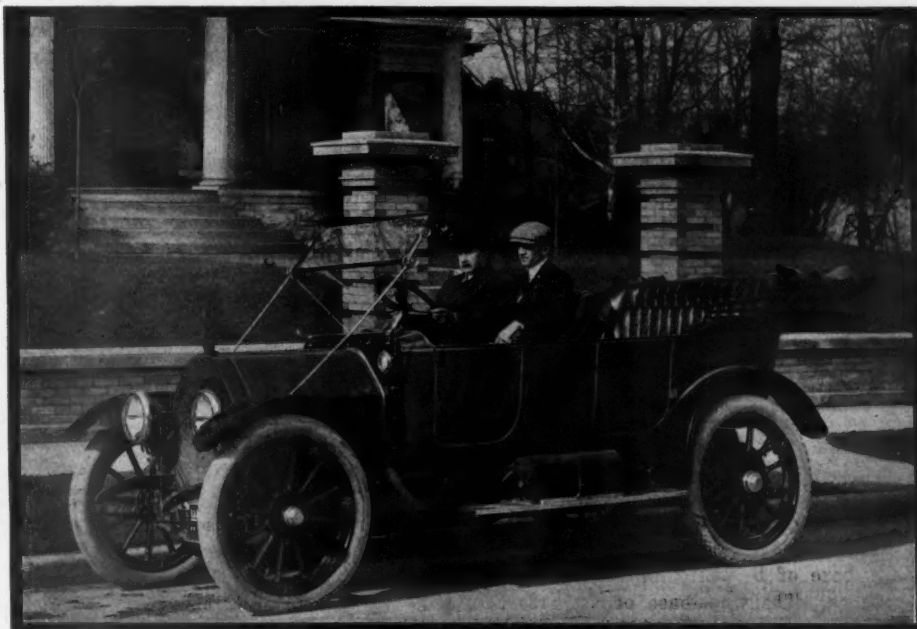
Horse Livery Dying Out—The recently organized firm of Schadd & Schrolle, of Bloomington, Ill., has purchased the Morrison brick livery barn and will convert it into a three-story garage. This makes five livery barns in that city which have been converted into garages during the past 4 years, leaving but three livery firms now doing business there. All of the others have been forced out of business by the motor car. The horseshoeing shops

also are feeling the effects of the change in transportation, and shops are growing fewer each year. The abnormally high price of feed also is helping the men who sell cars.

Another Plant Needed—Although the United States Rubber Co., through the United States Tire Co., is operating four tire plants at the present time, plans are under way for the erection of still another plant. The factories operated by the United States Tire Co. at present are located in Hartford, Conn.; Detroit, Mich.; Providence, R. I., and Indianapolis, Ind. The proposed new factory will increase the output about 5,000 tires daily. Its location has not been announced.

Ruling on Drawbacks—Under a ruling made by the treasury department drawback will be allowed under section 25 of the tariff act and the regulations promulgated thereunder on motor gears, transmission cases, gauge blanks and other articles of iron and steel imported in the rough and finished by the Brown & Sharpe Mfg. Co., of Providence, R. I. The allowance shall not exceed for exported finished article an imported corresponding article, and, if there is any valuable wastage, the value of such waste shall be taken into consideration in computing the drawback.

Longevity of Worm Gears—Totals of 58,000 and 124,000 miles are recorded for two worm gears used in the final driving mechanism of two motor trucks in England. The truck that has 58,000 miles to its credit in England is used by a prominent firm of biscuit manufacturers, while the one whose worm gear has driven it 124,000 miles is owned by the London Omnibus Co. The Pierce-Arrow company in this country knows several of its trucks that have been in use for approximately a year and which have a mileage of 10,000 miles, whose worm gears show no appreciable signs of wear, it is claimed.



ELWOOD HAYNES IN 1913 MODEL OF THE HAYNES CAR

Development Briefs in Accessory Field

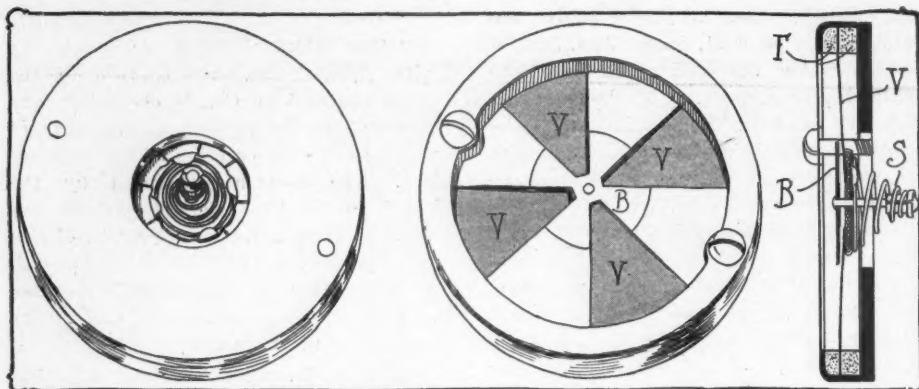


FIG. 1—DESIGN OF AMERICAN COMPENSATING VALVE

American Compensating Valve

IN Fig. 1 is illustrated a device for attachment to the carburetor to automatically control the influx of air as the speed of the motor varies. This is called the American compensating valve and is attached to the air intake of any of the standard makes of carburetors. It consists of a brass ring with its inner portion covered with an angular brass disk in which there is a $1\frac{1}{8}$ -inch hole. Just outside the annular disk is another plate separated from the disk by a fiber collar. The outer plate is cut on its diameter so that there are left four triangular vanes, V, Fig. 1, which are secured at their outer edges between two fiber rings, while their inner ends are free to move inward with the suction of the motor. Through the center of this sectional plate projects a pin which carries a small brass valve disk B held away from the head of the pin by a very light spiral spring S. The pin is free to move through the plate and valve disk. The ends of the vanes, upon opening, move the valve disk inward against the compression of the spring S, permitting the air to pass between the vanes and through the hole in the annular disk. The greater the suction of the engine the farther the vanes are drawn inward and the more the valve is opened. Claims made for the compensating valve are that it has a large area, sensitive action, and is positive in its proportion of fuel and air at all speeds and under varying weather conditions without adjustment being necessary. This is the product of the American Compensating Valve Co., Manitowoc, Wis.

Chicago Jack for Trucks

A new type of motor car jack has been produced by the Chicago Jack and Supply Co., Chicago, which has a novel method of application. It is primarily a ratchet mechanism operated by a hinged lever. The feature of the jack is the fact that the base is adjustable, allowing it to be raised to double its normal height. This arrangement is obtained by placing inside the cast-iron base an inner base carrying at its lower end a heavy pin

which projects through a slot in the outer base. The slot has notches cut in it so that the pin rests in them at different heights in the outer base. So far as materials are concerned, it is made of

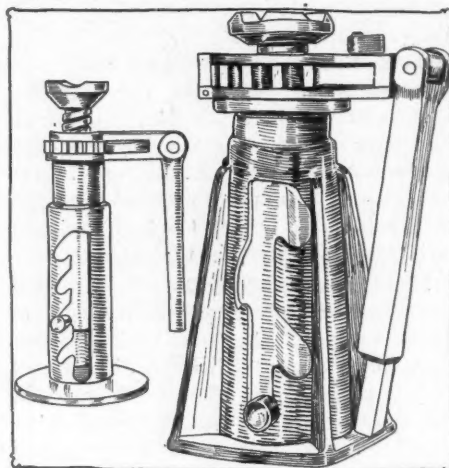


FIG. 2—TWO STYLES OF CHICAGO JACKS

malleable iron and high-carbon steel. The lifting portion is ball bearing so that it is easy to operate. The handle is not removable but is hinged so that the outfit takes up little if any more space than does the ordinary jack. Two sizes are made for pleasure cars, one with $8\frac{1}{2}$ to 17 inches adjustment and weighing $6\frac{1}{2}$ pounds, and the other with $10\frac{1}{2}$ to 21

Combination Jack, Truck and Turntable—American Compensating Valve—Unique Detective Clock Prevents Theft

inches adjustment and weighing 8 pounds. A larger type for commercial cars up to 6 tons is marketed. It is constructed on the same principle as the lighter jack and has a $10\frac{1}{2}$ to 21-inch adjustment and a weight of 23 pounds. The handle in this model is telescoped, and when not in use locks to the base of the jack and provides a means for carrying.

Weaver Twin Jack

A combination of garage trucks and jack is illustrated in Fig. 3 which is a Weaver twin jack made by the Weaver Manufacturing Co., Springfield, Ill., and is designed particularly for garage use. It consists of a horizontal triangular frame mounted at the three corners on small casters whose sockets are ball bearing. Vertically through the frame at two points extends a bevel-gear-and-worm jack. The two jacks are inter-connected by a shaft and bevel gears so that when one of them is lifted the other lifts at the same time. An extension crank handle can be raised to any angle for convenient operation, so that guard rails, or bumpers, or other impedimenta about the car do not interfere with it.

One unit containing the three casters and two jacks is used under each axle so that the car can be raised completely from the floor in two operations and is at the same time upon a ball bearing truck which enables it to be moved about the garage or turned around in its own length. Friction is reduced to a minimum by a complete equipment of ball and roller bearings. The gear nuts which raise the screws each revolve upon twenty $\frac{1}{4}$ -inch hardened steel balls and the gearing is so arranged that a leverage of

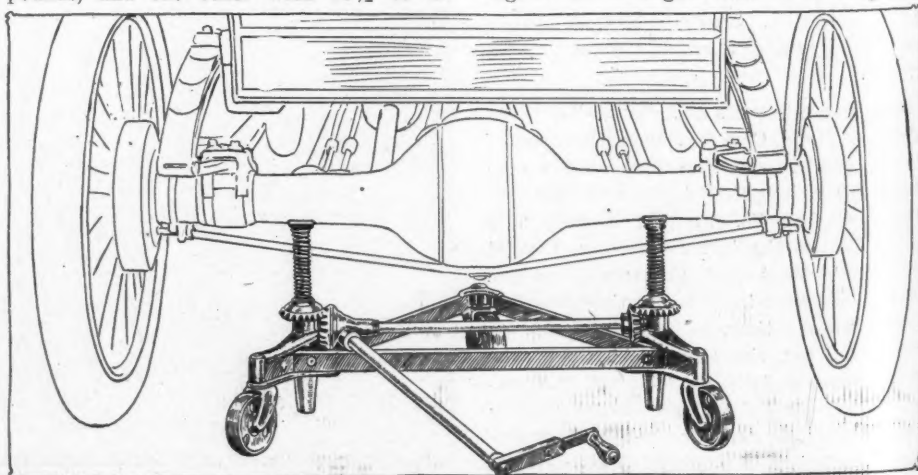


FIG. 3—FEATURES OF WEAVER TWIN JACKS

Novelties for Use of the Motoring Public

A Portable Electric Air Compressing Plant for Garages—Lightning Self-Starter Uses Acetylene—Rub-On Varnish

400 to 1 is obtained. The steel screws are hardened and are $\frac{1}{8}$ inch in diameter. The 34-inch wheel base prevents any liability of loss of balance. A convenient feature of the jack is that the handle crank is made to telescope, the contracted position permitting quick action in raising or lowering the standards, while the standard position gives sufficient leverage for performing the actual lift. A feature of use is their employment as tire savers whenever the car is to stand in the garage for any length of time.

Clayton Air Compressors

Air compressors designed expressly for tire inflation in garages are manufactured by the Clayton Air Compressor Works, East Cambridge, Mass. One of its special outfits is illustrated in Fig. 5. This is a complete portable compressed-air power plant and consists of a small compressor direct-driven from the motor, and a storage tank mounted with a switch-board upon a small hand-truck. The compressor is of the single-cylinder vertical high-speed type with a normal displacement of 1.7 cubic feet of free air per minute at 100 pounds' working pressure. The motor is $\frac{1}{2}$ -horsepower capacity and is provided with an automatic starting and stopping switch.

Lightning Self-Starter

An acetylene starting system of novel design is the Lightning self-starter made by the Yankee Co., Utica, N. Y. The arrangement with its attachment to the cylinder of the motor is illustrated in Fig. 6. The device comprises four priming valves of special construction, a distributor valve for connecting the cylinders to the acetylene tank, an air pump

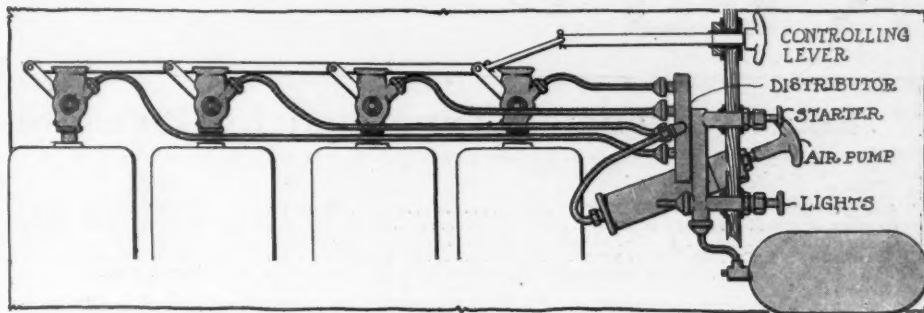


FIG. 6—ELEMENTS OF THE LIGHTNING SELF-STARTING SYSTEM

and a lever system for putting the priming valve in the proper position. The priming valve screws into the cylinder head in place of the ordinary priming cocks and has a priming cup opening in its top. Within the barrel of the valve housing is a cylindrical valve through which openings are cut to place the cylinder in communication with either the prim-

ing cup opening or the acetylene tube; a third position closes both for normal running. While the car is in operation or at rest the valve is closed tightly against its seat so that the cylinder compression is not impaired. If the handle of the controlling lever is pulled out half-way, communication is made between the combustion chamber and the atmosphere. Then the handle is pulled out to its limit, connecting the distributor valve with the interior of the cylinder so that by turning the starting handle on the distributor a charge of acetylene is admitted to the cylinders. Then six full charges of the air pump are forced into the cylinder to mix with the gas, after which the handle of the controlling lever is pushed back to its original position. The cylinders thus being filled with a combustible mixture of acetylene gas and air it is only necessary to produce a spark to start the motor.

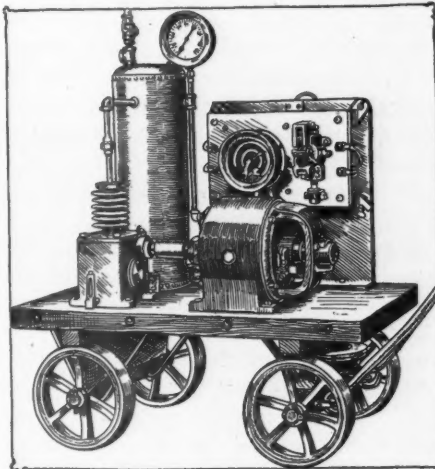


FIG. 5—CLAYTON PORTABLE ELECTRIC AIR-COMPRESSOR

ing cup opening or the acetylene tube; a third position closes both for normal running. While the car is in operation or at rest the valve is closed tightly against its seat so that the cylinder compression is

Unique Speed Recorder

Latest among the devices for providing an autographic record of a car's use and number of stops, length of running time, etc., is called the Unique detective clock. This is the product of the Unique Recorder Co., Hazelton, Pa., and is illustrated in Fig. 4. The arrangement differs from the usual type of autographic recorders in that it is attached to the dash but has no connection with the running gear or wheels. In appearance it is merely an ornamental brass clock, but in the rear of it is a printed paper dial on which any movement of the car is recorded. The dial is so printed as to indicate whether the car has been moved during the day or night, the length of running time being easily obtained. The clock runs for 8 days without rewinding and the dial gives records for the same length of time, as illustrated at the left of Fig. 4. When the car is not in motion a very faint line is traced on the record disk but with the motion of the car the line becomes heavy. This provides an accurate check for the owner as to when the car is used.

Rub-On Varnish

A varnish for finishing faded hoods and fenders and which can be applied with a cloth is manufactured by the Rub-On Varnish Co., Buffalo, N. Y. It is stated that the hood and fenders of the car can be finished in 1 hour and that the varnish dries over night.

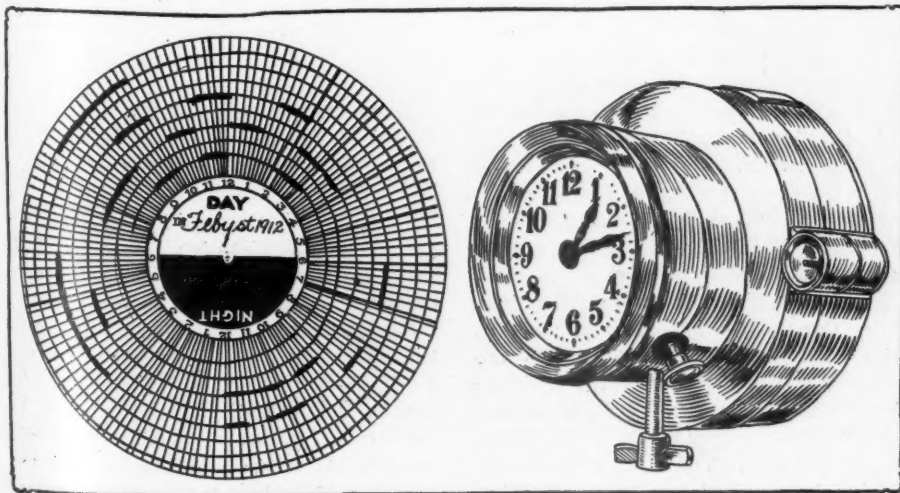


FIG. 4—UNIQUE SPEED RECORDER AND A CHART MADE BY IT



Brief Business Announcements

Recent Agencies Appointed by Pleasure Car Manufacturers

Town	Agent	Car	Town	Agent	Car
Assumption, Ill.	J. A. Vilmore	R. C. H.	Washington, D. C.	Probey Carriage Co.	Detroit
Buenos Ayres	Tort & Co.	Havers	Washington, D. C.	W. Elkins Reed	Mercer
Coshocton, O.	A. L. Crowthers & Son	Flanders	York, Pa.	Auto and Truck Sales Co.	Silent Knight
Granville, N. Y.	G. C. Walker	R. C. H.	York, Pa.	Snyder Auto Co.	White
Toledo, O.	James Baumgardner	Columbus	York, Pa.	North York Auto Repair Shop	National

DETROIT, Mich.—Walter H. Van Deusen has been appointed sales manager of the Abbott-Detroit here.

Washington, D. C.—The Elmore agency, of which Charles E. Myers is manager, has taken quarters at 929 D street, N. W.

Indianapolis, Ind.—Bruce Daniels has resigned as motor editor of the Indianapolis Star to become advertising manager for the Motor Car Mfg. Co. of Indianapolis.

Baltimore, Md.—The agency for the Bosch magneto for the entire western shore of Maryland has been placed with the Carl Spoerer Sons Co., maker of the Spoerer car.

Toledo, Ohio—The new salesrooms of the Jamieson Brothers Co., on Huron street, are nearly ready for occupancy. The concern will distribute Oldsmobiles in northern Ohio.

Washington, D. C.—The effects of the Pope Automobile Co. were sold at public auction May 31 by H. N. DeWitt, the receiver. The affairs of the corporation will be wound up within a few days.

Indianapolis, Ind.—F. C. Schoen has been appointed district manager for the Westcott Motor Car Co., with headquarters in this city. He was formerly with the local sales branch of the Cole Motor Car Co.

Minneapolis, Minn.—A. N. Smith, secretary of the Minneapolis Automobile Dealers' Association, has become a salesman for A. F. Chase & Co., handling the Premier, Oakland and Imperial and Lincoln truck.

Cleveland, O.—D. Blake Battles, formerly body designer and head of the art department at the Peerless Motor Car Co., has opened an office at 408 Park building, where he is doing motor car advertising and designing.

Syracuse, N. Y.—E. H. Bull has joined the sales force of the Franklin Automobile Co. and will become district sales manager in charge of the northwestern territory. Mr. Bull will make his headquarters at Denver, Colo.

Toledo, Ohio—The Lewis Electric Welding and Mfg. Co., 254 Cherry street, has purchased the Toledo Stove Works plant at the intersection of Detroit avenue and the Michigan Central belt line. The company, which started 3 years ago in a small

room on Cherry street, will spend \$10,000 in remodeling its newly acquired property.

Boston, Mass.—H. T. Chandler has been appointed branch manager of the O'Neil Tire Protector Co.

Columbus, Ohio—Alexander F. Barnhard, located at 955 South High street, has taken the central Ohio agency for the King.

Washington, D. C.—The G. R. Cowie Co. has been formed to handle the Cole line in this city. Quarters have been secured with the Lozier Sales Co., 1315 H street, N. W.

Milwaukee, Wis.—R. C. Chidester has been appointed manager of the Milwaukee branch of the Packard Motor Co., of Chicago, to succeed O. G. Heffinger, who is transferred to Chicago.

Buffalo, N. Y.—Wilbur F. Reynolds, sales manager of the Lippard-Stewart Motor Car Co., has assumed the duties of advertising manager in connection with the supervision of the sales department.

Somerville, Mass.—The building department has just approved permits for two large public garages in the city, one of which will be conducted by Jameson Brothers and the other by D. L. Downey. Both buildings will cost in the neighborhood of \$10,000 each.

Stoughton, Wis.—Carl and Gustave Roe have purchased a Main street frontage and will erect a \$35,000 garage building, to be two stories high with basement, 44 by 128 feet, of reinforced concrete construction. The firm will do business as the Roe Automobile Co.

Racine, Wis.—The Foster-Lockwood Oil Co. has been organized to manufacture and distribute petroleum products, specializing in oils, gasoline and grease for motor car use. A \$20,000 warehouse has been constructed at St. Patrick street and the C. and N.-W. Railroad with a storage capacity of 100,000 gallons.

Indianapolis, Ind.—The Henderson Motor Car Co. has appointed as assistant sales manager W. M. Armour, who formerly was sales manager of the Overland Motor Car Co., of St. Louis, and later district sales manager of the Marion Sales Co., of this city. The Marion Motor Car Co. has been joined by Thomas L. Marshall, who has taken stock in the concern

and who is acting temporarily as sales manager.

Grayling, Mich.—The Grayling Machine Repair Co. has opened a garage, with Espersen Hansen manager.

St. Louis, Mo.—Fred Campbell, proprietor of an accessory house, has been elected president of the Motor Accessories Association.

Columbus, O.—Papers were filed with the secretary of state decreasing the authorized capital of the Weetman Motor Truck Co., of Cleveland, from \$200,000 to \$15,000.

Cedar Rapids, Ia.—The Barton-Ford Motor Car Co. has just taken possession of its new building at 616 Second avenue. This company handles the Velie, Briggs-Detroit and King cars.

Cleveland, O.—The Republic Rubber Co., of Youngstown, O., has opened a branch at 5919 Euclid avenue, with Ben. C. Swinehart in charge. Mr. Swinehart has been at the head of the truck tire sales department of the Republic for 3 years.

Toledo, Ohio—L. L. Law, manager of the Jackson Motor Parts Co., has opened up salesrooms in the new Jamieson block on Huron street. This will be a distributing agency for Jackson cars in northwestern Ohio, southern Michigan and eastern Indiana.

Boston, Mass.—The Lansden Electric Vehicle Co. has been formed in Boston with Albert B. Freeman president, Gardner Freeman treasurer and William H. Britton secretary. The company recently took the agency for the Lansden electric truck for Boston.

Toledo, Ohio—The Auto Tire and Repair Co., formerly located on Ontario street, has moved into the new Thatcher building on Madison avenue, and the firm name changed to the Peerless Rubber and Tire Co. Elmer Allmeroth is manager and J. R. Humphrey, of Cleveland, will have charge of city sales.

San Francisco, Cal.—Charles B. Shanks has made a long term contract with the Kelly Motor Truck Co., whereby he will act as direct factory representative in California, Oregon, Washington, Utah, Nevada, Arizona, New Mexico and the Hawaiian islands. Branch headquarters will be established in San Francisco at

once, and agencies will be established in each of the states.

Holgate, Ohio—W. Hustwiler & Son, proprietors of the Holgate garage, are building a large concrete addition.

Indianapolis, Ind.—The resignation of Frank B. Willis, manager of the local Studebaker sales branch, will become effective July 1.

New York—C. D. Schmidt, who represents C. A. Mezger, Inc., has opened an office at 276 Canal street, corner Broadway, where he will represent the Baldwin Chain and Mfg. Co.

Rockford, Iowa—N. J. Popham and Gus Michell, under the firm name of the Popham-Michell Motor Car Co., will erect a new garage 33 by 100 feet, with two floors and basement, which will be completed by October 1.

Bristol, Conn.—Homer H. Judd and James H. Davis, who recently leased land on Riverside avenue, have approved plans for a garage on the lot that will be 100 by 80 feet, one story in height, of brick and concrete.

Winnipeg, Can.—The local branch of the H. W. Johns-Manville Co. has moved into new quarters at 92 Arthur street. This is a six-story and basement building, 100 feet deep by 50 feet wide, and will be occupied throughout by the company's offices and storerooms.

Akron, O.—John McDuffy, of Akron, has been sent to Kansas City as branch manager for the B. F. Goodrich Rubber Co. Announcement has also been made of the following new salesmen; Harold Young to Providence, R. I.; John Farrell to Indianapolis; Arthur Swartz to Boston;

Harry Stone to Buffalo; B. Frandsdorf to Cincinnati.

St. Louis, Mo.—The Firestone Tire and Rubber Co.'s branch has moved from 2300 Olive street to 3201 Locust street.

Bridgeport, Conn.—Campyon B. Cuttor, of the Long Hill Auto Station, has taken the agency for Everitt cars, also the Hewitt motor trucks.

Montreal, Can.—R. F. Girdwood has severed his connection with the local branch of the Ford Motor Co. of Canada, of which W. L. Stoneburn has been manager since the establishment of the branch.

St. Joseph, Mo.—Mortimer Zucker who is now connected with the sales force of the Auto Supply Co., of Chicago, is covering the same territory which he handled when with the Auto Specialty Co., of Kansas City.

Dallas, Texas—The Overland Automobile Co. is erecting a three-story building with basement at the corner of Commerce and Preston streets, which will be called the Overland building. It will be occupied on or before July 1.

Newark, Ohio—Dennis White has sold out the Newark agency for the Ford line to the Ford Motor Sales Co., which is composed of A. P. Hess and T. J. Priest. A location on South Fifth street has been secured for the salesroom and garage.

Grand Rapids, Mich.—The Page Auto Hoist and Specialty Co. has been organized with a capital of \$50,000. The officers are: President, Mrs. Addie Walther; vice-president, J. W. Vandenberg; secretary, George H. Parks; treasurer, Anton Reim. The officers and salesrooms of the company are located in the Shepherd building

and the factory is at Madison avenue and the Pere Marquette railroad.

St. Louis, Mo.—The Missouri Motor Car Co. will occupy a new home on July 25. The new building is on Locust street.

Indianapolis, Ind.—A factory sales branch has been opened in North Capitol avenue by the Regal Motor Car Co., with E. M. Cassell as manager.

Buffalo, N. Y.—An agency for the sale of the Lozier has been opened at the Buffalo taxicab garage, Edward street, by Raymond G. Danahy. The Lozier agency will be known as R. G. Danahy & Co.

Detroit, Mich.—Jerome Ingersoll, formerly with the Rauch-Lang Election Co., has joined the Baker electric forces and will have charge of the Detroit store, as well as the distribution system of the company for Michigan.

Indianapolis, Ind.—It is announced that R. L. Sutherland will become manager of the Indianapolis sales branch of the Studebaker Corporation when Frank B. Willis retires July 1 to become affiliated with the Metzger Motor Car Co.

Columbus, Ohio—Ira Thompson and R. Westwater, under the firm name of Thompson & Westwater, has taken the central Ohio agency for the Inter State, with headquarters at 142 East Gay street. They occupy the second floor at that number.

New York, N. Y.—A consolidation of the business of P. B. Bromfield Advertising Agency and the Wagner-Field Co. was consummated on June. The new firm will be known as Bromfield & Field. Although F. J. Wagner will continue as a stockholder, he will take no active interest in the business of the new concern.

Recent Incorporations

New York—Knickerbocker Commercial Vehicle Co., capital stock, \$300,000; to manufacture commercial vehicles; incorporators, E. A. Dillenbeck, Jr., J. B. Williams, E. A. Smith.

New York—Automobile Repair Co., capital stock, \$25,000; general motor car business; incorporators, J. A. S. Hand, E. J. Dunn, C. P. Doughlass.

Philadelphia, Pa.—W. F. Kerr Auto Supply Co., capital stock, \$5,000.

Philadelphia, Pa.—Amplex Motor Co., capital stock, \$1,000,000; incorporator, N. P. Coffin.

Providence, R. I.—A. S. Lee Co., capital stock, \$5,000; motor car business; directors, D. J. Healy, H. L. Walford, G. O. Washburn.

Rockford, N. Y.—Cotta Gear Mfg. Co., capital stock, \$100,000; to manufacture motor car parts and light machinery; incorporators, P. A. Peterson, C. E. Cotta, L. Faust.

San Marcos, Tex.—San Marcos Auto Co., capital stock, \$2,000; incorporators, Frank Bradley, C. L. Hopkins, J. R. Destelger.

Sunnyvale, Cal.—Union Motor Truck Co., to manufacture trucks; incorporators, C. Y. Williamson, E. Horstman, W. P. Buckingham, E. Pomeroy.

Toledo, O.—Plano and Heavy Box Truck Mfg. Co., capital stock, \$20,000; to manufacture motor car jacks, etc.; incorporators, A. T. Raynor, W. F. Runkle, Henry Hoppenberg, James Long, E. M. Hoppenberg.

Toronto, Can.—Baker Motor Vehicle Co., capital stock, \$100,000; incorporators, L. H. Walker, W. H. C. Burnett.

Wilmington, Del.—Universal Car Co., capital stock, \$3,000,000; to manufacture, sell and deal in motor cars and appliances.

Wilmington, Del.—Amplex Motor Car Co., capital stock, \$1,000,000; to manufacture motor cars and appliances.

Worcester, Mass.—Worcester Spring Co., capital stock, \$25,000; to manufacture springs, etc.; directors, C. B. S. Jackson, G. A. McKenzie, C. E. Sampson.

Akron, O.—Pfahl Gauge and Mfg. Co., capital stock, \$30,000; general repair and machine shop; incorporators, F. L. Pfahl, C. A. Strobel, E. E. Otis, L. R. Barnes, E. P. Otis.

Akron, O.—Ideal Commercial Car Co., capital stock, \$200,000; to manufacture motor cars; incorporators, H. C. Gates, A. Tachant, A. J. Dettoff, M. Stump, E. B. Quirk.

Baltimore, Md.—Detroit-Baltimore Co., capital stock, \$50,000; to manufacture motor cars, trucks, etc.; incorporators, R. H. Croxton, C. A. Jarman.

Boston, Mass.—Harvard Garage Co., capital stock, \$5,000; directors, E. F. Blake, J. B. Lynch, W. E. Collins.

Brooklyn, N. Y.—Non-Destructible Tire Protector Co., capital stock, \$25,000; incorporators, M. Pelz, W. Weiner, H. Seufert.

Buffalo, N. Y.—Manufacturers' Service Co., capital stock, \$10,000; to manufacture machinery for motor car factories; directors, W. J. Minehan, H. W. Huntington, H. B. Parry.

Buffalo, N. Y.—Electric City Specialty Co., capital stock, \$25,000; motor car specialties; incorporators, J. E. Stark, J. H. Baer, I. E. Stark.

Buffalo, N. Y.—Brooks Motor Car Co., capital stock, \$100,000; incorporators, H. G. Rechsteiner, G. B. North, B. O. Kerr.

Charleston, S. C.—Robinson Automobile Co., capital stock, \$20,000; incorporators, J. T. Robinson, B. F. Robinson, W. B. Wilbur, C. B. Fulet.

Charleston, S. C.—C. D. Franke & Co., capital stock, \$250,000; general wagon and motor car business; directors, E. H. Jahnz, J. H. Jahnz, H. D. Lubbs.

Chicago—Chicago Ferromatic Tire Co., capital stock, \$10,000; to manufacture and deal in motor cars and parts; incorporators, R. N. Carter, H. C. Fleming, E. J. Kneip.

Detroit, Mich.—Jolls Motor Truck Co., capital stock, \$20,000; to manufacture trucks; incorporators, L. E. Jolls, G. Hornberger, S. L. Harry.

Detroit, Mich.—Delphie Specialty Mfg. Co., capital stock, \$20,000; to manufacture motor car parts.

Hamilton, O.—Wyoland Automobile Co., capital stock, \$10,000; to sell and rent motor cars and deal in accessories; incorporators, R. Shickner, G. H. Eversmann, W. Petzer, P. F. Davidson, C. J. Sears.

Henry County, Tenn.—Paris Auto Transfer Co., capital stock, \$2,500; incorporators, F. P. Johnson, J. N. Cooper, J. O. Shackelford.

Huntington, N. Y.—Huntington Motor Trucking Co., capital stock, \$10,000; incorporators, James Thomson, Samuel Riddell, Ralph Lewis.

Indianapolis, Ind.—Nesom Motor Co., capital stock, \$200,000; directors, C. T. Nesom, F. B. Brown, S. Sagalowsky.

Indianapolis, Ind.—Ohio Motor Car Distributing Co., capital stock, \$5,000; incorporators, J. Slottow, S. C. Wood, F. C. Churchill.

Jersey City, N. J.—Liberty Rubber Co., capital stock, \$50,000; to manufacture tires; incorporators, B. S. Mantz, L. H. Gunther, J. R. Turner.

Kittery, Me.—V-C Motor Truck Co., capital stock, \$100,000; president, Horace Mitchell; treasurer, C. E. Smothers.

New York—Hexolene Lubricating Co., capital stock, \$6,250; to manufacture lubricants; incorporators, Fred Lesser, H. Ehrenthal, H. Bloch.

Manufacturers' Communications



BAD SEWER CAP AT AMSTERDAM AVENUE AND TWENTY-SECOND STREET, NEW YORK



STREET CAR TRACKS AT TWENTY-EIGHTH AND BROADWAY, NEW YORK, IN POOR CONDITION

THE DEALER AND GOOD ROADS

NEW YORK—Editor Motor Age—I attended a good roads convention once. And four of the five speakers on the program referred feeling to the Appian way and the fact that Roman civilization at its highest expressed itself in magnificent roads. When I left the meeting I think I absent-mindedly told the chauffeur to drive to the Appian way. At any rate, that convinced me that Roman roads are being too well press-agented to need mention here.

But it is unquestionably true that good roads are the arteries of a nation and that one of the best assurances of national soundness is adequate and well maintained highways. Easy communication between towns makes for an exchange of ideas and for mutual growth and progress. A striking illustration of this is the fact that practically the only places in Europe where one gets true local color nowadays is in the isolated towns shut in by mountains and with no roads leading to the outer world. There one finds the dress and customs of a century ago, while nearby villages with good roads leading out to larger towns may be alive with the progress and knowledge of the twentieth century.

On the whole, however, Europe can teach us much in the building and maintaining of excellent highways. Germany, France and England each spends as many millions a year in merely maintaining their national highways as we do in building new roads. This is a pitifully poor showing, when you consider that these three nations together can be put into one of our states.

The good roads movement in the United States is active but not concerted. I believe the only plan of permanent value is one organized on a national scale, partly

subsidized by the government and partly by the communities benefiting by the improved highways, with a certain percentage provided for maintenance. For, as one journal points out, "It is a relatively simple matter to stimulate interest in improved highways to the point of securing huge appropriations for new construction, but it is far more difficult to receive appropriations for the purpose of keeping these roads in good condition."

It seems to me that the dealers of New York city should be interested in putting on a vigorous footing such a national movement. First of all, New York is the Mecca of motorists from all over the states and the streets of New York are decidedly open to criticism, as these accompanying snapshots, taken in New York streets, will show. Secondly, New York is a criterion for other sections of the country, and a movement started with New York prestige has an excellent chance of sweeping the country. Thirdly, more cars are sold in New York city yearly than in any other

single city in the United States. Better roads will mean better going and longer life for these cars. And the intelligent dealer of today understands that the best way to conserve his own interests is, in every possible way, to conserve those of his customers. And to set afoot a movement for giving those customers better roads and so longer life for their cars, is a very practical way of serving them.—L. A. Hopkins, president Abbott-Detroit Motor Co.

NOT CARBURETER TROUBLE

Chicago—Editor Motor Age—We note in Motor Age's story of the 500-mile Indianapolis race that it is stated that de Palma made a stop to adjust his carbureter. We wish to advise that de Palma's carbureter was not adjusted from the time of the start to the finish of the race. De Palma removed the tickler cap from the float chamber of the carbureter. He was instructed to do this before the race, but neglected to do it.—Findeisen & Kropf Mfg. Co.



BIG HOLES IN WEST TWENTY-SEVENTH STREET, BETWEEN SIXTH AVENUE AND BROADWAY, NEW YORK CITY